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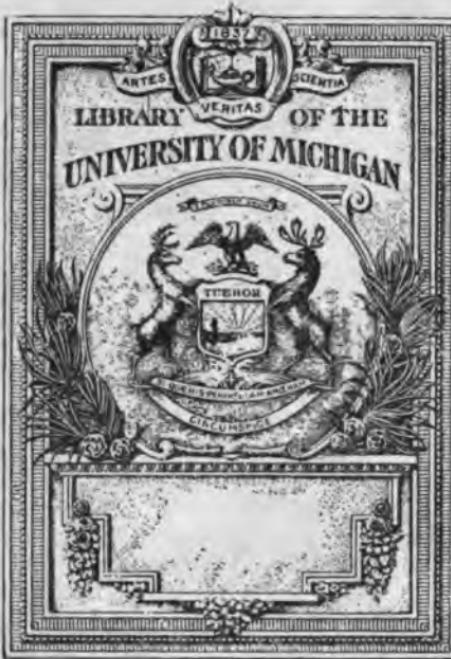
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P R E F A C E.

In writing a Preface for the Sixty-first Volume of 'THE ZOOLOGIST' the question arises as to the work achieved by these long successive yearly publications, and it is probable that it is to the philosophical conclusions of Zoology that the greatest contribution has been made. We are not alluding to any of the directly philosophical papers that have from time to time appeared, but are referring to the bionomical observations with which our contributors have enriched these pages. They directly appertain to the important problem of the status of intelligence possessed by other animals than ourselves, and we think we may challenge the existence of any other commensurate series of volumes, in any language, and over an equal length of time, that record such a number of facts on this subject. It is more than probable that many writers of these notes have scarcely realized their philosophical importance. Animal psychology is still in its infancy, and, like meteorology, must depend largely for its progress on available observations. Mr. Mallock has recently drawn attention to a contemporary volume, emanating from Stonyhurst, on Psychology, in which the writer, Father Maher, S.J., states:— "Careful reflection must convince us, that no matter what pains and industry be devoted to the observation of the animals, our assurance with regard to their subjective states can never be more than a remote conjectural opinion."

We believe that this statement is largely fallacious, and that the pages of 'THE ZOOLOGIST' have already demonstrated,

and will still go to prove, that the status of intelligence and the mental concepts in animal life are not a forlorn quest, but are subjects which future naturalists will be enabled to comprehend—and to a no inconsiderable extent—from the bionomical observations they will inherit from present workers.

With such reflections, the contributors to '*The Zoologist*' may rest assured that their contributions will ultimately be recognized as something beyond detailing the curiosities of animal existence, and the present tale of sixty-one volumes may largely influence the future study of an adequate Animal Psychology.



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When captured it had a partially clipped wing and a deformed foot, looking as though it had been caught in a trap. It was put into a cage, and kept at the farm through the winter. In the spring the bailiff's wife gave it to my wife, and we kept it in a cage in the drawing-room. But it never would talk, and only screamed in a harsh voice; so that when in June, 1900, it escaped whilst the cage was being cleaned, and, as its wing-feathers had grown again, flew off, we did not greatly regret it. It flew almost at once to the farm not a quarter of a mile away, and fed daily with the chickens, but did not allow itself to be taken, though it was never far from the poultry-yard.

In October, 1900, it was observed to be busy on the roof of the farmhouse, weaving a tunnel-shaped bower with twigs, which it did in a very well-chosen place where the thatched roof ran into a brick chimney, getting both shelter from the wind and warmth. This tunnel was about a yard long, and the mouth of it is the lower orifice in *fig. 1*. In December, as it got colder, the bird changed the direction of the entrance, and it retired to this tunnel every night, and lived out the winter there. In the spring of 1901 it added another tunnel parallel to the first, the two openings side by side; but soon it blocked up this, and built another above it, and then again turned the mouth of the tunnel round towards the roof-tiles (see *fig. 1*), in order apparently to prevent the wet south-west wind blowing direct into its tunnel.

It always occupied the latest part of the structure, often sitting in the mouth of the opening by day, but retiring inside for the night. The structure was now a yard and a half or two yards long. In April it became necessary to put new thatch on the roof, but this was done without disturbing the bird or its building, and it soon became very active, snipping off the twigs from a hawthorn hedge, and carrying them in its beak, screeching as it flew, with a very quick beat of its thin pointed wings, and with its pin-tail never spread. It worked most industriously, taking a long time to fix each twig, and weaving them together very neatly at the opening, which was about six inches across, and all the way along the tunnel inside. The outside twigs, though they all looked rather haphazard, were so interwoven that no wind ever displaced them.

By May it had greatly enlarged the pile, and had brought it

down and fastened it ingeniously to the elbow of the stack-pipe, which gave increased stability, but made a bend in the tunnel necessary. The whole structure was now seven or eight feet long, and nearly three feet across at the lower end, and with this the bird seemed content.

Thinking it a pity that it should not have a chance to breed, we looked out for a mate for it in the summer. There was no possibility of telling whether it was a male or a female as it was flying about, but we argued, from its nest-building industry, that it was a female, and got what was said to be a male, and, catching our bird at night in its tunnel, we put the pair into a cage. They agreed very well, but showed no signs which could certify that they were male and female. Soon we let them both fly, and, though they would keep together, the new one never offered the slightest assistance in carrying sticks or building, though the old one began to add a good deal to the existing pile. It is noteworthy that it never used any but the prickly twigs of the hawthorn as long as the hedgerows were bare, but when the leaves came on the hedges it would have no more to do with them, but betook itself to the hazel pea-sticks in the farm-garden, and bit off the topmost twigs. Some of these were visible near the spout-elbow, and many more on the roof-tiles. But, though the new mate did not work, he did a good deal of mischief, for he picked off the small green apples from the orchard-trees, and dropped them on the ground in such numbers that we were obliged to catch him and shut him up; and, lest he should have taught this trick to the old one, about which we were uncertain, for we could with difficulty tell them apart when loose, we caught and caged them both until such time as the apples should be big enough to defend themselves. But, alas! a rat got in one night and killed the new mate. We set the other free, and no more apples were plucked.

In the autumn we noticed that the Parrot took longer flights, sometimes going a distance of a quarter of a mile, and often joining a flock of Starlings, with whom it would alight and apparently feed in the park or on the lawn, and fly with them to the big trees; but it never went off altogether. It passed another winter (1901-2) safely, and was again surprisingly active in adding to, and, we thought, rather spoiling, its nest, changing its doorway again, and making it as seen in *fig. 2*. It would fly up to

and over the house at Park Hill, and we were often afraid that some of Mr. Lascelles' Hawks "at hack" might kill it. But it survived, and I never saw any bird chase it either "for food or play." It was almost always to be found in or near the farm-yard, and was a great pleasure to watch; it seemed so busy and full of purpose, and looked so bright sitting outside or just in the mouth of its home.

It was last seen at the time of the Coronation as first fixed, and after June, 1902, we saw it no more. Whether it departed with its friends the Starlings, or was taken by a Hawk or a Rat—we incline to suspect the latter—we never knew; but the place thereof knoweth it no more, and now we look at the empty nest not without a feeling of sadness.

Since writing the above, I have seen, in 'Bird Notes' for October, 1902, a notice of this Parrot, which is there called *Bolborhynchus monachus*, and is stated to be the only Parrot which is known to build a nest, weaving its huge structure on to the ends of branches, and building each spring a new one on the top of the old. The nest, which is usually entered from below, consists of an antechamber, with the true nest behind—the latter lined with grass, thorny twigs being used exclusively for building purposes. The bird is said to have an excruciating screech, though it can learn to talk well. It is further stated that a pair in the possession of Mr. Sidney Buxton built a nest five feet high and six feet in circumference, and that other pairs have also built in captivity.

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE,
1899-1901.

By O. V. APLIN, F.L.S.

WHERE no other locality is mentioned, the notes refer to the parish of Bloxham.

1899.

January 5th.—News from Mr. W. H. Gale of a Corn-Crake caught at Nuneham on the 3rd, and then quite at home in one of the greenhouses.

19th.—Dr. Routh told me that about five years ago he saw on several days at various spots between Epwell, Shutford, and Sibford a pair of Hoopoes. It was in the late spring. He is well acquainted with the appearance of this bird.

26th.—Fieldfares and Redwings have been fairly abundant all the season. To-day there are a good many Song-Thrushes about the grass-fields.

28th.—Bullfinches numerous, and very destructive to plum-buds for some days.

February.—The floods in the Sorbrook valley in the early part of this month were the largest we have had for a good many years. Violent storms at sea lately, and here also about the 18th,

26th.—A Song-Thrush's nest, nearly finished, in the shrubbery.

March 10th.—Bullfinches have been singing a good deal this last month. Several pairs of Peewits to-day in a rough grass-field on this side of Duns Tew.

16th.—Blackbird sang here for the first time this season, to the best of my knowledge; this is a very late beginning.

20th.—Mistle-Thrush's nest in orchard, apparently finished. Bitterly cold weather; snow last night, and the thermometer at 24° this morning.

23rd.—Very cold dry weather lately; severe frosts.

24th.—Ring- and Stock-Doves cooing, and other signs of softer weather.

26th.—A nest of the Long-tailed Tit, half finished, in a broom-bush.

29th.—Saw two Chiffchaffs, and heard one in song. The hedges show no sign of green, and the aspect of the country generally is quite brown.

April 8th.—When Otter-hunting in the Cherwell valley, just above Somerton, saw six pairs of Wild Ducks (all doubtless breeding birds), a Snipe, and a Green Sandpiper. Mr. Foster-Melliar told me he saw a Blackcap in his garden on March 19th; this bird had probably wintered there.

15th.—Heard the Wryneck. Not for many years have we had such persistently inclement weather in spring. No summer migrants except Chiffchaffs and Wheatears reported as yet, and the Chiffchaff is almost silent.

18th.—Several Redstarts. Cuckoo.

19th.—Swallow, Willow-Wren, Tree-Pipit.

22nd.—Visited Clattercote Reservoir with Mr. A. H. Macpherson, and saw there three Crested Grebes, a drake and two duck Teal, Dabchicks, Coots, Moorhens, and two Common Sandpipers. Noticed arrival of Sand-Martin, Whitethroat, and Ray's Wagtail.

25th.—House-Martin at Charlbury.

26th.—Visited Blenheim with Mr. J. Whitaker, and noticed a good many Coots on the lake. Blackcap near Glympton.

27th.—Mr. Fowler and I saw in Port Meadow, Oxford, seven or eight Dunlins, and five Golden Plover on the wing. Mr. Darbey told me he received a Grey Phalarope from the neighbourhood of Oxford in the middle of February, and a Corn-Crake which was killed by flying against the telegraph-wires on the 19th inst. He also showed me two Crossbills (green and red), killed at Pusey (three miles over our borders) early in the year. Noticed the Sedge Warbler.

30th.—Lesser Whitethroat. Mr. Darbey informed me this month that he received an adult Lesser Black-backed Gull in the early part of the year, which had been shot near Oxford. Mr. G. W. Bradshaw has recorded an adult bird of this species, shot at Caversham Lock on the 30th April, 1898 (*Zool.* 1899, p. 136).

May 10th.—Mr. Fowler told me that he saw several Lesser Redpolls in Christ Church meadow this morning. I saw one there in the afternoon. Mr. Trench, of Lincoln College, told me he heard Stone Curlews passing over Lincoln College, calling, about 11 p.m. last night. He is well acquainted with the bird.

11th.—Swift and Whinchat.

12th.—Mistle-Thrush has been in song constantly up to this date; more than one sing in or close to the garden. I never heard it in better form than it was this morning. At times one bird sings a few notes in the manner of a Song-Thrush, but the song usually consists only of the rollicking strain, followed sometimes by a few confused shrill hard notes, lower in tone.

13th.—Several of the twenty-eight young Rooks shot to-day had more or less white chins, and some had part of the under mandible yellowish white, one almost entirely so. I always notice this variation at this particular rookery.

15th.—Spotted Flycatcher and Turtle-Dove.

16th.—A few Nightingales visited the immediate neighbourhood this season. Two or three pairs are established on the Grove estate, and a nest was taken later on in Bloxham Gate spinney (a nest at the bottom of the plantation last year got off safely); one was heard at Milton on the 28th April, and I heard one near Lower Worton to-day. Mr. Charles Jeffreys informs me that he has preserved a Peregrine Falcon which was shot at Kirtlington on the 16th February.

18th.—A Redstart has a nest and seven eggs in one of the new nesting-boxes here.

June 6th.—Heard the Mistle-Thrush singing. It sang regularly and daily until the end of May.

7th.—A Mistle-Thrush perched on the house-roof ridge. The next day it settled on the stable-roof.

8th.—Heard Nightingale at South Newington.

15th to 4th July.—Away from home.

July 8th.—Goldfinches have been seen feeding young lately in my man's garden, which adjoins mine.

21st.—In consequence of the very dry weather, Starlings, Robins, and Warblers (Garden Warblers and Lesser Whitethroats chiefly, with some Blackcaps) have been destructive to red currants, and Blackbirds and Song-Thrushes to gooseberries.

August 3rd.—The drought continues with great severity. Wheat harvest began here on the 24th ult. Birds (Starlings and Robins included) have eaten great quantities of bush-fruit.

10th.—The country is wonderfully brown. Apples falling off the trees; plums will not swell properly; butter is very scarce; outdoor peaches already ripe. The air is wonderfully clear and dry, and the golden mellow light of the afternoons remarkably beautiful. But it is the most destructive drought experienced for many years. In proof of the dryness of the air, it may be mentioned that it is difficult to harvest beans, the pods bursting when they are touched. Wasps are scarce, strange to say.

11th.—Many Swifts, noisy at evening.

18th.—Fewer Swifts.

15th.—Still a few Swifts. A good rain fell at last.

23rd.—The drought has resumed its sway. Harvest finished. Blackbirds very destructive to ripening plums.

25th.—On a barley-stubble, very foul, and gay with poppies which have flowered since the barley was cut, I saw a flock of over two hundred Turtle-Doves, feeding almost in the manner of Starlings. There is a spinney of ash-poles and thorn-bushes near there, where some are bred, and all these birds were probably bred in the district. The Turtle-Dove has increased very much in North Oxon of late years. Twenty years ago we considered it rather uncommon.

26th.—In the 'Field' of this date it is stated by Mr. J. M. Marshall, of Wallingford, that a pair of Hobbies had recently bred in Brightwell Park, and that a keeper had shot one old and two young birds. Mr. Darbey afterwards told me he had a female from Brightwell this month. I was talking to-day to a man (about thirty years of age) about the decrease in the number of Fieldfares which visit us, when he told me that when quite a boy he killed forty-five at three shots.

27th.—Flock of about a dozen Mistle-Thrushes.

30th.—Another rain; the drought somewhat abated. Mr. Bartlett showed me two Crossbills which were shot in the larches on the hill at Bodicote in the late autumn of 1897. They were in very fresh plumage, of a brick-red mottled with yellow; the latter colour more clearly defined in one than in the other. Also a variety of the Hedge-Sparrow; it had two or three white

feathers in the wings, breast and belly white with the exception of a few feathers, scapulars white, back nearly all white, crown partly white. It was shot at Great Bourton in March, 1898. Also two adult male Pied Woodpeckers—one from Tusmore, killed two years ago ; the other shot in the neighbourhood of Banbury more recently.

September 1st.—Flock of Mistle-Thrushes. A Wheatear and a party of about fifteen Pied Wagtails on a ploughing. A Red-legged Partridge, fully moulted, had the legs, bill, and eyelids orange instead of red ; it was a heavy bird, requiring 18 oz. and a sixpence to balance it.

5th.—Saw a Clouded Yellow Butterfly in a potato-field. Red Admirals are very abundant, and feed on fallen plums and on those hanging on the trees which the Blackbirds have pecked. 81° in the shade.

8th.—Shot a very curious Partridge on Bloxham Grove. The rusty colour on the head, face, and throat very bright and well developed. The grey vermiculated feathers on the breast from the throat downwards mostly dashed with the same rusty yellow. Sides of the belly and rump the same, and many of the flank-feathers tipped and splashed with the same. The bright rusty yellow of the upper throat extending over the breast and belly suggests the colouration of *Perdix daurica*. I exhibited the bird at the British Ornithologists' Club meeting in April, 1900. Five or six brace of birds killed in the same field the same week showed no signs of abnormal colouring.

9th.—A vast flock of Linnets (perhaps between one and two thousand) on a barley-stubble, very foul with knot-grass and other weeds, at Milcomb.

10th.—About dusk a Landrail rose from a strip of roadside grass, and flew at once over a rather high hedge close to me.

18th.—Very big flock of Peewits in a field of thin swedes. Partridges are fairly numerous and strong this season, though scarcer on hilly ground than they should be, doubtless in consequence of the great drought. On the 25th August I saw an old Partridge drinking at a spring, a thing I never happened to see before. Of "cover" there is practically none, swedes having been an almost entire failure. Red-legged Partridges are more numerous than ever. To-day three brace out of thirteen

and a half at Milcomb and South Newington were young Red-legs.

14th.—News from Mr. Fowler of Hobbies haunting a great roost of Swallows at Kingham (*vide Zool. 1899, p. 476*).

15th.—Swallows and Martins congregating on the roof of this house this morning; being of rough "stonesfield slate," facing east and standing high, this roof is a favourite gathering-place.

22nd.—A great congregation of Swallows and Martins on the roof until after 8 a.m. When they flew up they were like a swarm of bees. They returned to the roof two or three times. This has been going on for some days. Mr. Bartlett showed me two Eared Grebes (*Podicipes nigricollis*) over the moult, or nearly so, which were shot on a pond about three miles north-west of Banbury on the 19th inst. I afterwards bought them. They were proved by dissection to be a male and female, and are probably a pair of adult birds which had bred, or attempted to breed, in the neighbourhood. Although their irides were bright yellow, not red, I do not think they were birds of the previous year which had passed the summer with us without breeding, as is, I believe, the case with Grebes in the first season after that in which they are hatched; because the eyes of Grebes vary a good deal (perhaps according to the season), and because the male still exhibits some rufous colour on the sides of the head. This colour is not shown by birds in the spring following that in which they are hatched, and is certainly not assumed in autumn. The birds had not been seen on the pond on which they were shot before the morning they were killed, but there are several large reservoirs in the neighbourhood—one of them not more than four or five miles away—which would have afforded them a congenial summer home. Three days after they were killed their bills were blackish, and their legs blackish olive, or blackish with a strong tinge of green. Upper parts of the body nearly as dark as the summer dress. Throat white, the white extending nearly to the nape in the female. In the male the sides of the head tinged with rufous. Fore-neck intermediate between summer and winter plumage. Breast greyish. Mr. T. A. Coward kindly sent for my inspection a male shot in Anglesey on the 1st August, 1892 (*Zool. 1892, p. 358*). I think it was hatched in

1891, and had not moulted in the summer of 1892. The sides of the head are tinged with brown, not with rufous as in my male. Plumage of the upper parts has a worn appearance.

25th.—On high ground near Tadmarton Heath, late in the afternoon, found many Meadow-Pipits on stubble and among "seeds." Three brace out of twelve and a half at Milcomb were Red-legged Partridges.

27th.—Chiffchaff in song in the garden.

28th.—The congregation of Swallows and Martins, especially the former, has been smaller the last two mornings.

29th.—Very few on the roof, but a good many about the fields in the day. Many Pied Wagtails on the fresh ploughings—quite a flock in two places. Coal-Tit with spring note.

October 4th.—Mr. C. Jefferys on this date received from Kirtlington an immature male Hobby. A Marsh-Harrier, believed to be a three-year-old male, wounded and captured on the 2nd inst., has been recorded by Mr. T. Terry Cooper, of Swallowfield, Reading (Zool. 1900, p. 143).

6th.—Again (after an interval) a good many Swallows and Martins on the roof. A Landrail shot in the Milcomb Road allotments. Very scarce this year. I only heard one in the spring.

7th.—No Swallows or Martins on the roof to-day, and hardly any to be seen anywhere. Those on the roof yesterday were no doubt passing migrants. A Starling here imitates the Green Woodpecker's cry pretty well.

8th.—A few Swallows passing slowly westward, although at first sight they appeared to be merely hawking for insects.

11th.—A good many Goldfinches about the thistly fields on Milcomb hills. Blackbirds and Song-Thrushes swarm in the hedges and in Milcomb gorse, where there is a wonderful crop of hips, haws, and blackberries, the bushes of the last-named looking perfectly black at the top with ripe fruit. Flocks of Meadow-Pipits in long grass on hillside.

18th.—Great and Blue Tits carefully searching a row of large plants of "cottage kail" infested with the grey aphid, which has done so much damage this season.

19th.—A Humming-bird Hawk Moth (numerous this year) at a petunia blossom.

20th.—News of a Woodcock shot in potato-field at Hook Norton on the 7th.

28th.—Redwings in the hedges, which look quite red in the distance from the heavy crop of haws. At the end of this month a Grey Phalarope (now in my possession) was picked up at Kirtlington. Mr. Darbey told me that he had a male Peregrine Falcon from Tar Wood this month.

November 8th.—News of an adult Gannet caught alive in a field at Lower Tadmarton on the 1st inst. Chaffinch sang all its song, but poorly; and again the next day.

7th.—News from Mr. R. Surman, of Oxford, that he had in a cage a bird he believed to be a hybrid between the Blackbird and Song-Thrush. He caught it outside Worcester College gardens, where it was probably hatched. I called to see the bird in July, 1900, when it had much the shape of a Blackbird, a dull orange bill, back brownish black, and under parts mottled brown. At the end of August, 1901, I saw it again; it was partly in moult. Upper parts chiefly a dark rich bronze-brown or umber-brown. Under parts mottled. Bill yellow with a brownish tinge. Mr. Surman said it sang a little, and that the song was peculiar, although something like a Blackbird's.

8th.—Saw in the large meadow called Bestmoor, in the Cherwell valley above Somerton, a flock of about one hundred and fifty Golden Plovers, with a lot of Peewits.

10th.—A few Fieldfares about. A flock seen going to roost in the evergreens at Great Tew on the 8th. Great numbers of Greenfinches, Starlings, Wood-Pigeons, and other birds roost there. Two Goldfinches in the garden, and several about the Milcomb hills.

18th.—Fieldfares often passing over now.

28th.—A good many Fieldfares and Redwings. News of a Fork-tailed Petrel picked up dead in a ploughed field at South Stoke about the middle of the month, after a strong gale from S.W. and W.

December 2nd.—Three and a half out of ten and a half brace of Partridges between Milcomb, Barford, and South Newington were Red-legs. Many Fieldfares and Redwings.

8th.—Three or four wild Snipe in the Sorbrook valley here; scarce birds in these upper valleys.

11th.—Sharp frost. A Snipe at South Newington.

12th.—Three inches of snow on ground.

13th.—Snow all the forenoon.

14th.—Thermometer down to 17°, and 20° at 9.30 a.m.

16th.—Severe weather. Stock-Doves feeding on turnip-tops.

19th.—Steady cold thaw.

28th.—The want of rain during the autumn is severely felt after the dry summer. Several wells, never known to fail previously, are now dry. Three or four Bramblings shot from a flock near the village.

31st.—Large flock of Bramblings, with Chaffinches and a few Sparrows, near the village.

I find I have met with the Barred Woodpecker on about half a dozen occasions this year in the immediate neighbourhood of Bloxham. It may be slightly on the increase. As it is not persecuted in any way, and is not known to or seen by one person in five hundred at the most, it is strange that it does not become numerous. It probably suffers much less than the Green Woodpecker from severe weather, as it does not feed on the ground; but it seems to be a law of nature that Woodpeckers should *not* be numerous.

I am indebted to Mr. Heatley Noble for the following interesting notes :—

In the shooting season of 1894–5 an immature White-tailed Eagle remained for some weeks in Fawley Court Deer Park, and enjoyed the protection of Mr. Mackenzie, who on one occasion saw the Eagle settle in a tree just over his head. Mr. Noble also saw the bird.

A female Smew was killed on the river at Hennerton about 1881.

In 1892 or 1893 a pair of Pied Flycatchers are said by the Hon. and Rev. A. Parker to have nested in his garden at Bix.

The Royston Crow is occasionally seen in the neighbourhood of Henley-on-Thames, but is rare.

Mr. Noble saw a Stone Curlew three times in one day, getting quite close to it, on a rabbit-warren at Stonor, on Nov. 13th, 1899. This is the latest date in the autumn on which I have known the "Curloo" to occur in Oxon.

A female Scaup was shot on the river at Hennerton on the 13th November, 1888. The Tufted Duck, Pochard, Wigeon, and Golden-eye all occur on that part of the river in winter.

Mr. J. A. Bucknill informs me that he saw about seven Common Terns on Port Meadow, Oxford, as late as December in 1891, and that one was shot on the 11th, and brought to him. In February, 1893, he saw two on Otmoor, and another at Bablock Hythe. A Green Sandpiper was shot (and brought to him) on the river at Oxford on the 30th November, 1891, during a heavy flood.

Mr. Bucknill saw a drake Golden-eye in full plumage on Clattercote Reservoir on the 14th December, 1893. It is uncommon in this dress in Oxon. He also saw a flock of about twenty Grey Geese on Otmoor during a very deep and heavy flood about December, 1893. He believes three were killed by a local gunner, but they were not identified.

1900.

January 2nd.—Very heavy rain last night. Blue Tit sings.

5th.—Corn-Bunting sings. Large flock of Bramblings near Milcomb. This is not the same flock as that seen near Bloxham.

6th.—Coal Tit with spring note. A Bittern was flushed on the 16th December last from a ditch bordering an osier-bed within a mile of Reading (but in Oxon) by Mr. W. T. Crawshay, of Caversham Park, who recorded it in the 'Field' of this date.

15th.—A good deal of rain recently.

19th —A male Bittern shot by a keeper at Shiplake. It had been observed several times during the previous five weeks, and "his boom could be heard occasionally in the nights." Recorded by the Rev. J. Climenson, of Shiplake Vicarage, in a letter to the 'Reading Mercury' of the 20th.

20th.—A second male Bittern (weighing 2 lb. 7 oz.) shot in the same place by the same man. It was seen in the flesh by Mr. Bradshaw, who wrote me word of it. The 'Oxford Times' of this date reports a Bittern shot at Pinkle Lock, near Eynsham, by Mr. G. Longford, and preserved by Mr. George Barson. Many others occurred in different parts of the country about this time.

February 3rd.—Seven inches of snow on the ground; no

drifting. Bullfinches eating plum-blossom buds. A number of Bramblings with Chaffinches near Hook Norton reported yesterday. Wind north.

6th.—Sharp frost. Mr. Coombs, of Chipping Norton, showed me a Buzzard, shot at Ditchley in the early autumn of last year; also a Crossbill—an adult orange-coloured bird—one of a dozen which haunted some larches near that town in the winter of 1898–99.

7th.—Very severe frost. Mistle-Thrush eating holly-berries within a yard of my window. The berries are now nearly finished; last winter they were hardly touched. News from Mr. Darby of a Grey Shrike shot at Nuneham on the 5th.

8th.—Severe frost (14°), and only 19° at 10 a.m.

11th.—Birds very tame. Mistle-Thrush eating berries of *Cotoneaster microphylla* trained on house, and from another bush in front of the dining-room window.

12th.—I saw a Hedge-Sparrow eat some grains of wheat given to the poultry. We have here a Hedge-Sparrow with one or two of the outer primaries in one wing white; these are conspicuous when it flies.

13th.—Great numbers of birds come to be fed. Intense frost.

14th.—Another deep snow last night. It lies about ten inches deep on the lawn, and there are huge drifts. Mistle-Thrush eating berries of *Cotoneaster simondsi*, which are seldom eaten by birds. Rook and Jackdaws with the other birds at the food put out in the garden, and about a hundred Starlings this morning. Where these have come from it is hard to say, for in severe weather it is usually difficult to see half a dozen about the village. They have gradually increased at the feeding-place from day to day, and must have some means of communicating the fact that food is to be had here to their fellows.

15th.—Furious storm of rain and snow.

17th.—Saw a big flock of Ducks flying over.

19th.—Rapid thaw and heavy rain. Blackbird sings, and Chaffinch.

20th.—A flock of birds on a stubble consisted of about half Bramblings (the males getting very dark), and the rest Chaffinches and Tree-Sparrows. Very big floods in the valleys.

21st.—Ground white with fresh snow.

22nd.—Very mild.

24th.—The floods have been larger than any since 1894.

26th.—Mr. Fowler writes from Kingham :—" I rarely see a Stonechat here ; but yesterday, in the morning, I found a pair—the male in such gorgeous spring plumage that he shone resplendent even at a distance. In the afternoon the rector and I found several more. All were on hedge-tops by the roadside, in places which here are never their haunts." Vast flocks of Bramblings near the village at the end of the month. Over five inches of rain fell this month.

March 3rd.—Only a small number of Bramblings in their old haunt. To judge by the amount of their respective songs to be heard, Blackbirds have withstood the severe weather better than the Song-Thrushes.

5th.—Crossing an upland field near the village through which a ditch runs, a Jack-Snipe rose under my feet as I crossed the ditch. A large flock of Peewits in the meadows near Somerton, though some were at the breeding-places on the fallows, and had the spring calls. A big flock of Linnets on a clover-field.

12th.—Mr. Bartlett showed me a male Tufted Duck, shot at Wroxton recently. Also a blue-billed Hawfinch, shot there from a flock of twenty, and several Bramblings, which had been very abundant in the east of Banbury, twenty having been killed at a couple of shots ; several of them were females.

17th.—About sundown a great flock of Starlings passed over, going S.E. Although they were so high up that they looked no larger than Tomtits, the rushing noise they made attracted my attention. Possibly they were going to a large fox-cover called Dene Hill, for I heard later that such vast numbers had roosted there that they had caused the Foxes to vacate it.

18th.—About three inches of snow on the ground, and snow-showers.

24th.—A Robin building in one of the boxes.

27th.—During a long and unsuccessful search for spring migrants, I saw two Barred Woodpeckers, a female Redpoll, and some Bramblings, including a good dark male : it is very late for this bird to be with us.

30th.—Another Barred Woodpecker.

April 3rd.—Weather still very cold.

4th.—Robin in box has one egg.

10th.—Wood-Pigeons come here every evening to feed on ivy-berries. A Chiffchaff was seen to-day by my brother in the Cherwell valley; it was silent. Hedges show no sign of green.

12th.—Mr. Fowler saw one Chiffchaff at Kingham.

16th.—At Kingham he showed me Peewits' nests with three and four eggs, and he had seen two Swallows in the morning. We could find no Chiffchaffs, but I saw a Wheatear from the train on this side of Chipping Norton.

17th.—A Cuckoo flew over the garden.

18th.—The result of a long round in search of migrants was one Swallow seen.

19th.—Quite hot in the sun. Found one Chiffchaff. In spite of constant searches in all the most likely spots, this is the first I have seen. Tree-Pipit arrived. Hedges just showing green in places.

20th.—Redstart. Crow and two Magpies sitting.

22nd.—Hot day. Many butterflies; several Brimstones and Small Tortoiseshells, one Peacock, and a Small Garden White.

23rd.—Willow-Wren and Blackcap. Away from home until the 26th.

27th.—Cuckoo noisy.

28th.—Mr. A. Holte Macpherson and I noticed Ray's Wagtail, Lesser Whitethroat, Whinchat, Sand-Martin, and Whitethroat, but did not hear a Chiffchaff during a long walk in beautiful sunny weather. Near the village we saw a very fine example of the large race of the Wheatear. It was at one time close to a cock Chaffinch, than which it was clearly a considerably larger bird.

29th.—We noticed a Nightingale in Milcomb gorse, and another near Broughton Grange; also the Grasshopper-Warbler, House-Martin, and Sedge-Warbler. Also a Ring-Ouzel (quite a rarity here) between here and Broughton.

May 1st.—Mr. J. Whitaker was much interested in the great number of Lesser Whitethroats we noticed when driving into Warwickshire. We heard several Nightingales by the roadside, Only saw one Crested Grebe on Clattercote Reservoir. Little Grebe chattering.

3rd.—Received news from Mr. Darbey of a Golden Oriole
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(a fine male) shot in an orchard at Southrop, near Letchlade, which is only just over our county borders, on the 28th April.

5th.—A Great Tit has eleven eggs in a nest in one of my boxes; the eggs were piled up to-day.

6th.—Nightingale reported as heard in our paddock-walk (an old haunt, long deserted, during the years this bird became unaccountably rare in this district) a week ago. Swift appeared.

7th.—Among some young Rooks shot to-day two had some yellowish white on their bills, and one had a little white on the chin. A Mistle-Thrush has built a nest in a pear-tree trained like a pergola across the kitchen-garden path, seven feet from the ground. To match the green leaves of the pear-tree, the nest is formed externally almost entirely of green moss. There is a very little mud in the walls, and a few bits of haulm and a bit of tape. The nest is very inconspicuous, but my attention was drawn to it by seeing several bits of green moss dropped on the path. The nest had one egg in it to-day. I left home the next day, and on my return found it had been deserted.

8th.—Mr. Henry Blea, who keeps the 'White Lion' inn here, happened this morning to see a case containing a pair of Stone Curlews with young which I have in the hall. He then told me that thirty or forty years ago he lived on a farm near Heythrop, and in those days the "Curloo" (as this bird is called in Oxfordshire) frequented Cold Harbour and Showell farms. These farms are at an elevation of about 600 ft. above the sea, and between them the land rises to over 700 ft. The soil is the stony "stone-brash," and the country very open and bleak. Mr. Blea said there were never to his knowledge more than one or two pairs of Curloos there each year. He described the open country they frequented, the pace they ran, their habit of getting up quietly and stealing away, their two eggs laid on the bare ground, and the great difficulty he had in finding the two or three lots of eggs he ever found. I may here mention that two eggs of this species, taken at Ipsden on the Chilterns about the year 1887, have come into my possession. They are the only Oxfordshire examples of these eggs I have seen.

12th.—News from Mr. Darbey of a Ring-Ouzel shot at Bletchington on or about the 4th inst.

June 3rd.—Examined a Pied Woodpecker and a Hawfinch,

shot at Wroxton this spring. Heard and saw the Nightingale in the paddock-walk, which has been there now for a month.

6th.—Mistle-Thrush singing well this evening.

7th.—Again singing.

8th.—Nightingale reported as unusually common at Great Tew and South Newington Hill.

9th.—Heard Wood-Wren in a mixed plantation of beech and some oak at Tadmarton Camp. Two Nightingales there this spring. Mistle-Thrush singing.

10th.—Some young Starlings in a box against the wall, only five feet from the ground. Mistle-Thrush sang well.

13th.—Bullfinch several times lately close to the house, I believe in consequence of the bird-cherry having much fruit on it this year. Saw one in the tree the next day.

15th, 16th, and 17th.—Mistle-Thrush still singing.

18th.—Two pairs of Nightingales in the cover at South Newington were very noisy with the "sleet" and the Edible Frog-like "turrr."

24th.—A Barred Woodpecker noisy and excited all day in my neighbour's walnut-tree, and in trees in my garden. Possibly had young just out of the nest.

July 4th.—Mr. Fowler told me of one nest of the Marsh-Warbler, the young in which were hatched this morning. He believed a second pair had a nest.

14th.—Saw a pair of Red-backed Shrikes on the telegraph-wires below the Lessor Farm, Milcomb, a favourite haunt with these birds, which are scarce and local with us.

17th.—A covey of young Partridges could fly.

18th.—Very hot; 90° in the shade, 76° at 9 p.m. Swifts revelling in the hot evening.

24th.—Severe drought continues.

25th.—The hottest day I ever experienced in England; 91½° in the shade. A fresh south wind and the very dry air made walking possible. The air at night was of the "well-cooked" kind that one knows in the South. Swifts delight in this weather, and scream loudly.

29th.—A good rain at last.

August 1st.—A soaking rain. A good deal of rain after this, and stormy weather for some days.

15th.—Swifts numerous and noisy.

17th.—Some Swifts.

18th.—None seen.

31st.—Flock of fourteen Mistle-Thrushes.

September 1st.—Many old Partridges without any young brood. Three Landrails killed. Saw a Wheatear (migrant).

4th.—Red-legged Partridges are more numerous than ever this year. I have seen two and a half and three brace killed in a day, a thing unheard of about here ten years ago.

5th.—A big flock of Peewits about the arable land. There are a few Clouded Yellow Butterflies about this year, and I have taken one Pale Clouded Yellow, the only one I ever saw in this district.

7th.—Five brace of young and one old Red-legged Partridge formed part of our bag at Milcomb to-day. Heard of four Landrails bagged near Rollwright a few days ago.

10th.—A young Cuckoo shot to-day in my presence at Milcomb was changing its plumage.

12th.—Many Mistle-Thrushes in straggling flocks.

21st.—A few Meadow-Pipits, the first noticed.

24th.—Many in the swedes.

27th.—Chiffchaff in song.

October 3rd.—Flock of about a score of Pied Wagtails; many Meadow-Pipits.

8th.—Hedge-Sparrow singing for some days lately.

9th.—Very warm; 70° in the shade.

11th.—News from Mr. Bartlett that he had stuffed for a lady's hat an adult Lesser Tern picked up at Croperdy a month ago.

19th.—Humming-bird Hawk Moth hovering over a bed of Michaelmas daisies about 10 a.m. Temperature up to 50° in the day.

24th.—Song-Thrushes singing fairly well.

26th.—News from Mr. Darbey of a Buzzard (of the dark type) trapped at Wytham on the 24th, and of a Death's-head Moth caught close to Carfax Church, Oxford, on the 16th. This is a very fine specimen, and is now in my possession.

28th.—Some Redwings and Fieldfares.

November 1st.—Examined a Partridge which was seen on October 25th, at breakfast-time, to drop down into a narrow

enclosed courtyard at the back of a birdstuffer's house in the High Street, Banbury. It was uninjured, but was easily caught. I also obtained the skin of an albino Greenfinch, killed near Oxford on or about the 2nd September. This specimen is white, tinged with yellow more or less all over, except on the end of the quill-feathers. The yellow is brightest on the shoulders and the edges of the primaries and wing-quills, where an ordinary bird has the brightest colours. Irides pink. Bill perhaps rather paler than usual; the legs and feet appear to have been pale flesh-colour, claws very pale.

8th.—News from Mr. Surman of a Dunlin shot at some clay-pits at Summertown on the 3rd.

10th.—Red Admiral Butterfly in the garden.

12th.—A Peregrine Falcon shot at Boarstall Decoy to-day, recorded in the 'Oxford Times.'

16th.—News from Mr. Surman of a Green Sandpiper shot at Sandford-on-Thames on the 8th, and a Great Crested Grebe on Port Meadow stream on the 12th.

22nd.—News from Mr. Fowler of an unusual number of Redpolls in the birch-trees in the parks at Oxford, and that on the previous day he saw a Water-Rail in a ditch at Kingham.

23rd.—Song-Thrushes sing well.

24th.—Singing well about 8 a.m. in a cold thick fog. Many Bullfinches about. The fruit crop this year has been exceptionally heavy. To say nothing of garden fruits, the crop of beech-mast and acorns has been remarkable, in the case of the latter with disastrous effects on the cattle in the fields where there are oak-trees, although sheep and pigs have done well and not suffered. The hedge-fruit is quite a sight—crabs, sloes (a very heavy crop), blackberries, &c.—while the haws reddens the big hedges.

26th.—Song-Thrushes now singing grandly. Yesterday, and this morning between 7 and 8 a.m., it was, as an old farmer remarked, "quite a charm."

28th.—News from Mr. Darbey of another Peregrine Falcon (a bird of the year) shot at Boarstall yesterday.

30th.—Bullfinches chanting three double notes. During a day's shooting about Milcomb I met with Goldfinches three times. One bird sang, but poorly.

December 6th.—Examined at Mr. Bartlett's a well-pied

Blackbird. To judge from the plumage it was a female, and an old one, as it had a dull orange bill.

7th.—Very mild; 50°. In the afternoon a Blackbird sang fairly well. I had never previously heard one sing in December.

8th.—The 'Field' of this date contains a notice by "F. M. C." that a Grey Crow was shot at Henley-on-Thames on the 8th October, and a Puffin was picked up alive but exhausted on the 20th November.

12th.—Blackbird sang a little in a low tone; 52°, with a grey sky.

18th.—Examined, at Mr. Bartlett's, a beautiful drake Shoveler in the flesh, which had been shot on a pond at Wroxton. It was with another "less brightly coloured." This is a rare Duck in the north of the county.

20th.—Winter aconite flowering.

22nd.—Blackbird sang for some time in the afternoon. Song perfect, but rather low in tone. Temperature at the time 38°; air still.

27th.—Furious gale at night, and much rain.

28th.—Very rough stormy weather. While waiting for a Partridge-drive near Hook Norton, I counted eight Magpies as they came over a ridge of high ground in front of the guns.

29th.—*Galanthus elwesi* in bloom.

30th.—Rained all day and poured all night, with a furious gale from the north.

31st.—The gale gradually subsided, having done much damage. It knocked several conifers here out of the straight. The floods this morning are the biggest we have had for thirteen years. Some cottages with a foot of water in them. At Wickham Mill, on the Sorbrook, the occupier, who was born there, and has lived there all his life, being now fifty-seven, said the flood to-day was the highest he had known, and came up to the mill-door. Twenty years ago this would have meant flooded meadows for weeks, and hundreds of wildfowl; but now, with so much drainage, floods, although more frequent, run off very quickly.

(To be continued.)

NOTES AND QUERIES.

AVES.

Blackbird Laying on the Ground.—On April 26th, in the grounds of a friend at Claygate, I was shown a nest with four eggs of the Blackbird (*Turdus merula*) on the ground. The nest, so called, consisted simply of a hollow without any lining whatever scraped amongst the fallen pine-needles and trailing ivy in a shrubbery, the eggs being laid on the bare ground. They were evidently deserted when I saw them, but my friend's son told me he had put the old bird off the eggs, and the gardener also informed me he had twice seen it brooding on them. About a week previous to the discovery of the eggs my friend had pulled out a new empty nest of a Blackbird from a cypress close by, and I think it probable the owner, not having time to build a new one, laid her eggs on the ground a yard or two away from their destroyed intended home.—ROBERT H. READ (7, South Parade, Bedford Park, W.)

British Examples of the White-spotted Bluethroat.—Referring to the note of Mr. Nicoll on this subject in 'The Zoologist' for December last (p. 464), may I be allowed to state that the *first* British-killed example of the White-spotted Bluethroat was obtained at Scarborough, and described by the Rev. J. G. Tuck (Zool. June, 1876, p. 4956, and 'Field,' May 6th, 1876).—T. H. NELSON (The Cliffe, Redcar).

The Status of the Goldfinch (*Carduelis elegans*) in Britain.—

Essex.—Resident, local, not abundant; partly migratory; decreasing (Miller Christy, 1890).

Wiltshire.—Everybody knows: never so abundant as to beget familiarity: rapidly diminishing in numbers. Very rare in North Wilts (Canon Goddard). Not seen one for several years (Rev. A. C. Smith, 1887).

Devon.—Resident; formerly numerous; now scarce in most localities, except in autumn breeds. Decrease enlarged upon. A rare event to see an example of this once abundant bird (Rev. M. A. Mathew, 1892). Parfitt (1876) has it "frequent in orchards throughout the county."

Dorset.—In an imperfect copy I have of Mansel-Pleydell's 'Ornithology, &c., of Dorset,' he does not include it amongst his rarer birds of the county in 1875. But about 1887, in his complete work, 'The Birds of Dorsetshire,' he has it resident; more numerous since the Bird Acts (Wild Birds' Protection Act) passed.

Herefordshire.—D. Henry Graves Bull, in 1888 ('Notes on Birds of Herefordshire'). Fairly plentiful and generally distributed.

Buckingham.—Rev. B. Binges (1855) merely mentions it in his List, p. 108.

Devon.—Pidsley, in 1890. Resident, partly migratory; formerly numerous, but of late years a scarce bird. Decrease.

Sussex.—Borrer, 1891. Formerly very common, now comparatively rare; near Bryston not one hundred may now be seen, even at the most favourable time of the year. Diminution of the species.

Somerset.—Cecil Smith, in 1869. Not very uncommon; resident.

Cornwall.—Hearle Rodd, in 1880. Not a scarce bird in Cornwall; local.

Wilts.—Im Thurn in 1869. O.

Derbyshire.—Mr. Whitlock, in 1898. Principally known as a local autumn visitor. A few pairs breed in the south of the county, but only in very limited numbers. Formerly far more common. Practically unknown in some districts. In 1886 abundant, in 1868 still common at Burton-on-Trent. In the Peak district appears to be of uncertain occurrence, even in September. Partial extermination.

Northampton.—Lord Lilford, 1880–88. Decidedly less common, Decrease accounted for principally by the careful field-weeding of recent years, and birdcatchers.

East Kent.—Mr. Dowker, in 1889. Moderately common; not common of late.

Pembroke.—M. A. Mathew, in 1894. Common, resident; still about. Six nests in his grounds one summer.

Nottingham.—Sterland and Whitaker, in 1879. Common in parts.

Suffolk.—Babington. Generally distributed; not uncommon at Gazely, but rare at Livermore. Less abundant than formerly.

Oxford.—Aplin, in 1889. Resident, but also migratory; became exceedingly scarce, but increased again in last three or four years. Have kept up numbers in more secluded parts.

? *Durham*.—Prentis in 1894, in his 'Notes on the Birds of Rainton.' I do not often see a Goldfinch in the course of a year.

London.—Mr. Swann, in his 'Birds of London,' in 1898. Visitor on migration; decidedly rare as a nesting species. At Stratford "steadily on the increase."

London.—Hudson, in 1898 ; O. Pigott, in 1892 ; O.

Norfolk.—Stevenson, in 1866. By no means uncommon throughout the year.

Bucks and Berks.—Clark Kennedy, in 1868. Generally distributed in the two counties. Greatly decreased during the last ten years. More numerous in spring and autumn.

West Cheshire, Denbigh, and Flint.—Mr. Dobie, in 1898. Resident and generally distributed, but not common in West Cheshire. In Wirral a scarce resident ; a good many in autumn. Not common at Burton (West Cheshire). Common in Wales.

Stafford.—Mr. McAldowie, in 1898. Partly migratory ; very rare in summer, but more numerous in winter. Breeds in the north of the county, but is very rare. Gradually becoming extinct in Stafford, according to Mr. Yates.

Norwood district, Surrey.—Mr. Aldridge writes :—“ Becoming scarcer every year. Remorselessly hunted down. Certainly rare.”

Yorkshire.—‘ Ackworth Birds.’ Mr. Arundel, in 1898. Previous to 1860 was plentiful, since then diminished in numbers, and has become scarce. Thinks it is still resident. The diminution towards extinction has been going on over the whole of Britain, and quotes J. E. Harting to the same effect, and Mr. Howard Saunders, who says it has “ undoubtedly decreased in numbers during the last half-century” (‘ Manual,’ p. 178). Mr. Howard Saunders, however, records (1898) also that the Wild Birds’ Protection Act has operated in its favour during the past twelve years ; and adds, “ perhaps (also) agricultural depression.”

Lancashire.—Mitchell, in 1885, does not mention it.

Rutland.—Mr. Montagu Browne, in 1889, has it resident, but sparsely distributed. Even in Harley’s time it was “ increasingly rare.”

Northumberland.—Hancock, in 1874, had only seen it on two or three occasions. Casual visitant.

Lakeland.—Rev. H. A. Macpherson, in 1892. Thirty years before it was comparatively common, and nested freely from the Solway to the shores of Morecambe Bay, and even in the heart of the Lake District. Present stronghold is in the Eden Valley. Not met with on the south-eastern border, but stated to be slightly increasing at Underbarrow. “ Uniformly a very scarce bird.”

Sherwood Forest.—Sterland, in 1869. “ One of our commonest song-birds ” (p. 117). [No thought apparently of any decrease then—J. H. B.]

Birds of the Derwent Valley.—Mr. Robson, in 1896. “Casual visitant,” and of doubtful occurrence in the rest of the county in summer. [Evidently rare—J. H. B.]

Bird Life of the Borders.—Abel Chapman, in 1888. Not mentioned in index.

Cumberland.—Rev. H. A. Macpherson and W. Duckworth, in 1886 (see also *Lakeland*, 1892). Locally resident; generally decreased of late years, though still numerous in the Eden Valley. A few pairs breed sporadically in the north of the county. Very absent still in Eden Valley.

—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

[Mr. Harvie-Brown, in a letter accompanying the above interesting excerpts, expresses his wish that our contributors might bring the status of the bird up to date, *viz.* to the end of last year. Any notes we may receive on the subject will be reserved for some completeness with other records, and then published together in a condensed form.—ED.]

Lesser Redpoll nesting in Middlesex.—As there appear to be very few records of the nesting of *Linota rufescens* in Middlesex, I may mention that on June 28th last year I found a nest near Pinner. It was built in a furze-bush, and contained five eggs. As usual with nests of this species, it was lined with, and constructed very largely of, down from willow-catkins, with some bents and a few horsehairs.—ROBERT H. READ (7, South Parade, Bedford Park, W.).

*A Habit of the Lesser Redpoll (*Linota rufescens*).*—While looking through ‘The Zoologist’ for 1901, I noticed, on p. 816, an account of the rather mysterious disappearance of the eggs and lining of a Redpoll’s nest. The writer of the note did not think the nest had been robbed, but came to the following conclusion:—“Mayhap the old birds may have removed it (*i. e.* the lining) to line a new nest subsequently to the eggs being taken from the old one.” In reference to this remark, my experience with two pairs of Redpolls which I found breeding near Oxford a few years ago may be interesting. The following is a condensed account taken from my note-books:—On May 16th, 1898, a Lesser Redpoll’s nest, which I had found a few days previously, contained three eggs. I took two of these, and substituted a Linnet’s egg. On visiting the nest a few days later I saw the hen bird in the tree with some dry grass or roots in her bill, and on examining the nest I found that it had been considerably pulled about, and that both eggs had disappeared. A few days later nothing was left of the nest but its foundation, though the birds remained in the neighbourhood, as I

saw them frequently on subsequent occasions, and I feel sure they were building a new nest out of the materials of the old one, although a careful search failed to discover it.

About the 24th of May, not far from the spot where the first pair of Redpolls were breeding, I noticed a small nest in a young beech-tree, and on climbing to it I found it was a Redpoll's nest, which appeared to have been disturbed, and which had lost some of its lining. I noticed that the tree had been climbed, so the nest had evidently been robbed. On May 28th I again visited the same spot, and found that the nest had almost entirely disappeared—in fact, only a foundation was left—and I found among the topmost branches of a sallow-bush, only a few yards from the beech-tree, a new Redpoll's nest just ready for eggs. On May 30th this nest contained one egg.

We have here instances to show that the Lesser Redpoll will not tolerate any interference with her nest and eggs. I was very careful to disturb the first pair mentioned above as little as possible, and removed the two eggs with a teaspoon. The evidence from these three cases also goes to prove that this species, when disturbed in nesting operations, will remove the materials from the spot which has been discovered, and use them in forming a new home. What becomes of the eggs is less clear, but I suppose it is possible that they are transferred also. If I could have found the new nest of my first pair mentioned above, and it had contained the Linnet's egg, the mystery would have been solved.

In 'The Zoologist' for 1894, on p. 228, is a note on the breeding of the Lesser Redpoll, and it appears very possible that the birds acted in the same way as the three pairs already mentioned. It would be very interesting to hear the experience of other field naturalists on this presumed habit of the Lesser Redpoll. Is it a common habit among birds? I have studied birds out of doors as long as I can remember, but cannot recollect having observed a parallel case. It requires, however, very careful observation to prove that the *original makers* of the nest are removing it to a safer place, and that it is not any chance bird on the look-out for materials which has destroyed the deserted nest.—F. L. BLATHWAITE (Lincoln).

Migration of Jays.—It is interesting that a very noticeable increase in the number of Jays should have been observed in Hants and Dorset, as a similar increase occurred in this part of Sussex. *Garrulus glandarius* is always fairly well represented in this district, but an unusual number put in an appearance during the first week in October, an influx which extended well into November, since when I have only

observed the usual number. The behaviour of these birds differed somewhat from that generally observable in the species; they were mostly single birds, not so easily alarmed, and frequented trees in open situations to an extent not usual with the Jay.—ROBERT MORRIS (“Fernhurst,” Uckfield, Sussex).

With reference to the note on this subject (Zool. 1902, p. 484), Mr. Corbin may be interested to know that we have had more Jays than usual about here last autumn. Very few breed in this immediate neighbourhood, but more visit us every autumn. Last year I noted in my diary that there were a good many about on the 8th October, and on the 29th, that there were Jays all about, and “clearly a migration.” On the 4th November I saw several on the side of the parish where I only occasionally see Jays, and they were about there and very noisy on the 2nd December. We have not many acorns this year.—O. V. APLIN (Bloxham, Oxon).

Variety in Domestic Geese.—The tenant of my Rectory Farm has lately sublet some of his fields to a poultreyer, who turned down more than a thousand Geese on them. Though Goose-farming on a large scale is an ancient industry in East Anglia, it is a novelty here; so I went down to see the birds, and was surprised to notice that many of them were clearly of Bean-Goose descent, having the brown plumage of that species, with the black and yellow beak ending with a black nail. The Geese, I was told, were not bred in England, but brought over when young from Holland; and it seems pretty clear that in that country Bean-Geese, either captured in nets or winged birds, must have bred freely in confinement with ordinary Geese. I am not aware that any similar instance has been recorded.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

Wild Swans at Rainworth.—On Nov. 29th I was standing at the front door, when I heard notes of birds, and on looking up I saw, at a great height, a flight of what I thought were Wild Geese. I at once saw they meant to settle on the lake below the house, which is a beautiful piece of water in sight of a river, and covering about twenty-five acres. After two or three flights round they came against a hill covered with firs, and I at once saw they were Swans. There were twenty-one of them, six cygnets, and the rest pure white. After a great deal of flying round in great circles they settled, and, as I wanted a Notts-killed specimen, my son, after a talk, decided to take his rifle. He had an easy stalk behind banks of rhododendrons, and got within fifty yards of seven. When, picking out the largest, he sent a ball through him. The rest rose with great flappings, and two more were missed. They now were well

on wing, and about forty yards high, when he sent a ball right through one, which fell with a great splash in the lake, and, with loud cries, the remainder winged their flight away. On getting them, we found they were Bewick's Swans—a fine male, weighing 12 lb. and a cygnet. We were very pleased with ourselves, and soon a big case will be added to this collection. On Tuesday, Dec. 23rd, when Pike-fishing on lake at Welbeck Abbey, six Swans flew over the boat, but as there are any quantity of Mute Swans on this lake, I did not take much notice, till I heard a loud "whoop"; they settled near about thirty tame ones, and began to feed, now and again giving the loud cry "whoop whoop." They did not mix with other Swans, but kept a short way from them. When I left off fishing I walked up lake-side, and they only swam about three hundred yards away from bank. They were Whoopers, five mature and one cygnet. I noticed they looked much bigger than Bewick, which they are, and sat higher on water. The lake was let down to perhaps fifty acres, and on this were hundreds of Duck—quite five hundred Tufted Duck, besides many Pochards and several hundred Common Duck. I also saw a pair of Pintail. It was great luck to see both species of Wild Swans on the water, and in an inland county, within a month, and a treat I most thoroughly enjoyed. I have never seen Wild Swans on the water before, and only twice on wing in this county.—J. WHITAKER (Rainworth Lodge, Notts).

Fork-tailed Petrel in Somerset.—A specimen of the Fork-tailed Petrel (*Cymochorea leucorrhoa*) was forwarded in the flesh a few days ago by my brother from Cadbury, in Somersetshire. It was picked up on Nov. 30th by his shepherd in one of the fields in an exhausted condition, and died soon after being brought into the house. As Cadbury is some twenty-five miles from the nearest point on the coast, the bird had doubtless been blown inland by the recent heavy gales, but whether from the Bristol or English Channel is uncertain, most probably, however, the former.—ROBERT H. READ (7, South Parade, Bedford Park, W.).

Notes from Lincolnshire.—I have lately seen the following birds which have been sent for preservation to Mr. Nash, the local bird-stuffer:—A buff variety of the Redwing (*Turdus iliacus*), shot on Dec. 11th near Brainston. The bird, which is a male, is chiefly of a pale buff-colour, shading off almost to white on the tail-feathers, and the freckles on the breast are of the same pale colour. The flanks are of the usual rich chestnut-red, which contrasts strongly with the rest of the plumage. An adult male Bittern (*Botaurus stellaris*) was shot on

Dec. 1st near Washingborough, a few miles out of Lincoln ; and about Dec. 14th an immature female Black-throated Diver (*Colymbus arcticus*) was shot on the coast near Boston. On or about Nov. 27th a male Great Shearwater (*Puffinus major*) was shot not far from the mouth of the River Welland. This seems an unusually late date for the occurrence of this species.—F. L. BLATHWAYT (Lincoln).

R E P T I L I A.

Notes on the Pine-Snake in Confinement.—This Snake (*Coluber melanoleucus*), a native of North America, grows to a length of about seven feet. It is very beautifully marked, and has very often—rare in Snakes—a perfectly white throat, although the greater part of the under surface is mottled with salmon-pink. The colour above is whitish, with large dark brown spots edged with black ; the scales on the back are keeled, though on the sides they are quite flat, and there are also along the sides a number of smaller dark brown spots. The specimen which I possess was imported about six months ago, and is now very tame and gentle, and never attempts to bite. Its food consists almost entirely of young mice, and occasionally a small rat ; but it greatly prefers the first-named prey.

This Snake seems to possess elasticity of the jaws in a much lesser degree than other Snakes. A young Boa which I have at the present time, about two feet long, will take a half-grown rat with comparative ease, but the Pine-Snake, measuring six feet, has often failed to swallow a rat of the same size. My specimen always makes an attempt to constrict its prey, but generally unsuccessfully ; this is doubtless due to the difference in size between the Snake and its prey.

This species has the character of being somewhat of a cannibal, but I cannot corroborate this by my own experience, though a friend who kept two Grass-Snakes (*T. natrix*) with a *C. melanoleucus* found one morning the two smaller Snakes dead, with the appearance of having been crushed. My specimen has only cast once since I had it, the whole process taking some time.

The Pine-Snake is very hardy, mine being kept at from 55° to 60°, but even if kept below this temperature it still remains quite lively. It can also give a very loud hiss. This Snake, both from my own experience and that of others, is a very suitable inmate for the vivarium, not only on account of its hardiness, but also by the ease with which it may be tamed.—B. J. HORTON (805, Stratford Road, Sparbrook, Birmingham).

PISCES.

Occurrence of *Box vulgaris* on the Norfolk Coast.—In the middle of December last (1902) a specimen of this fish was found dead on the beach near Cromer. It measured 9 in. in length and 2½ in. in depth. Although the "Bogue" has been met with several times on the south coast of England, I am not aware that it has hitherto been recorded for the Norfolk waters.—THOS. SOUTHWELL (Norwich).

BIBLIOGRAPHY.

Mammals, Reptiles, and Amphibians of Suffolk.—Being engaged upon a short account of the above for the 'Victoria History of the Counties of England,' I should be most grateful for the loan of any local lists, however imperfect and fragmentary. Any information bearing on the subject would be thankfully received. The Bats especially seem to have received little attention, and my list is at present a very short one. Any well-authenticated records of the rarer species are greatly needed.—G. T. ROPE (Blaxhall, Tunstall, Suffolk).

NOTICES OF NEW BOOKS.

Index Animalium; sive index nominum quæ ab A.D. MDCCLVIII. generibus et speciebus animalium imposita sunt," &c. A CAROLO DAVIES SHERBORN, confectus. Cambridge University Press.

In these pages (vol. v. p. 39), we drew attention to this great work, then in progress; the first volume is now before us, consisting of about 1250 pages, and containing some 60,000 referential entries. The objects of the work, as set forth in the preface, are '(a) to provide zoologists with a complete list of all the generic and specific names that have been applied by authors to animals since Jan. 1st, 1758; (b) to give an exact date for each page quotation; (c) to give a quotation for each reference sufficiently exact to be intelligible alike to the specialist and to the layman.'

How is it possible to review or write a general notice of this giant undertaking?; how few can realize the value of what to an outsider will appear 60,000 bald references?; and what still fewer readers can appraise the awful labour and bibliographical capacity that makes such a publication practicable? It is absolutely the life of a man surrendered to the cause of zoology in one of its most real, but certainly least popular aspects—assuredly not a usual method of to-day. And yet this is one of the most important zoological publications in recent years, it makes a mighty concordance for the use of specialists, and affords a *vade mecum* in zoological technics. In the present study of scientific bibliography we are often hindered by the proposed reforms in nomenclature by writers who correct their predecessors to-day and again themselves to-morrow, in fact the subject has been not less neglected by qualified students than obscured by a plague of commenting flies. We have now what we may call a rabbinical index to the scientific names proposed for animals, one that will be accepted as the last word on an abstruse and

dry subject to which most zoologists have frequently to refer, and one which all descriptive writers will care to have near them. We trust the author will complete his self-imposed task, and although the labour is prodigious, and the circulation of the published results only limited, he has the satisfaction of knowing that the volume—and we trust volumes—must reach the hands of those for whom it is designed, and long after we and our views are forgotten, it is likely that the zoologists of the future will often advise on this subject—"consult Sherborn."

A Naturalist in Indian Seas, or Four Years with the Royal Indian Marine Survey Ship "Investigator." By A. ALCOCK, M.B., LL.D., F.R.S. John Murray.

It is more than thirty years since Collingwood published his 'Rambles of a Naturalist on the Shores and Waters of the China Sea,' the perusal of which we recall as we take up Dr. Alcock's volume on a similar subject, pursued, however, under very different methods. For since the first date, the "Challenger," amongst other expeditions, has shown what can be done by deep-sea dredging, and the equipment of the "Investigator" is largely due to that impulse. Moreover, many biological facts and propositions in relation to animal life have been gained since Collingwood's time, with which Dr. Alcock has illuminated his narrative.

There is still one great unexplored area of this planet, and it is questionable whether mankind will ever have but a fragmentary and inadequate knowledge of the fauna of oceanic abysses. The same gloomy depths, which many believe to shroud the remains of an Atlantis, must certainly contain animal life which a dredge is quite incapable to retrieve from the ocean floors. The sea has not yet given up her life! It is this mystery which, even taken alone, renders these pages of such surpassing interest to the zoologist, who, like Dante,

"Turns to the perilous wide waste, and stands
At gaze."

The cruises of the "Investigator" here recorded have been confined to the Bay of Bengal, with particular reference to the

Zool. 4th ser. vol. VII., January, 1903.

Andaman and Laccadive Seas, where the dredge was freely used, and its captures have provided notable illustrations for the volume. We are given much interesting information as to the animal life on the Adaman and Coco Islands, while the book has focussed so much information on the oceanic fauna, that we do not know where else to find such a readable introduction to the whole subject. We have long expected to hear of the Shark interfering with peaceful dredging operations, and we read that near False Point, "our seine, which we used sometimes to lay out as a drift-net, was, with its sinkers, weighing over 450 lbs., carried bodily away by an enormous Shark, round whose remains it was found some days afterwards, tied in a hundred knots, past all surgery." On the beach of South Sentinel Islet, Dr. Alcock was fortunate enough to witness the emergence of a brood of newly-hatched Turtles, "a swarm of little objects, looking like beetles, which all with one consent made for the sea."

The illustrations are ample, and are examples of a very successful method compared with the whilom wood-block.

Catalogue of the Library of the Zoological Society of London.
(Fifth Edition.) Published by the Society.

THIS publication is really a contribution to a knowledge of zoological bibliography. It contains the titles of about 11,000 different works now in the Society's Library, exclusive of periodicals, which are scheduled in an appendix. The Library, it is stated, now contains about 25,000 volumes. The catalogue has been prepared by the Society's librarian, Mr. F. H. Waterhouse, with his usual care and accuracy, and he has made the catalogue of a library a welcome guest for the book-shelves of any zoologist. The points on which it may generally be consulted are : (1) date and localities of publication ; (2) complete titles and full names of authors ; (3) many good cross references ; (4) useful annotations, or references to other writers and publications, as to dates of issue when separate parts have been published of works catalogued ; (5) references to the original channel of publication of works afterwards issued and distributed in separate form, &c.

Index Zoologicus: an alphabetical list of genera and subgenera proposed for use in zoology as recorded in the 'Zoological Record,' 1880-1900; together with other names not included in the 'Nomenclator Zoologicus' of S. H. Scudder. Compiled by C. O. WATERHOUSE, and edited by D. SHARP, M.A., F.R.S. Zoological Society, London, and Gurney & Jackson.

We have given the complete title of this publication, as it best explains the scope and reason of the work. Few descriptive zoologists are unconscious of what it means to provide a new generic title. To find an applicable name previously unused, having reference to some peculiarity of a representative species, and rendered according to the canons of the Greek and Latin tongues, is not too easy. John Wesley is reported to have said, in reference to musical hymnology, that the "devil had secured all the best tunes." In classificatory terminology it is practically certain that previous writers have appropriated all the best names, and consequently the need is urgent that we can refer easily to the generic jargon of our predecessors before adding to the awful list. Scudder, in 1882, gave us such a list to the close of the year 1879, and the present work not only supplements that, but also brings the record to the end of the year 1900. We thank Mr. Waterhouse for his conscientious labours in this dreary field.

Monographie des Cynipides d'Europe et d'Algérie. Par L'Abbé J.-J. KIEFFER. Paris : A. Hermann.

Monographie des Mutillides d'Europe et d'Algérie. Par ERNEST ANDRÉ. Paris : A. Hermann.

THESE two thick volumes form a considerable addition to our knowledge of the Palæarctic Hymenoptera, and, both being descriptive of the same order of insects, may be best noticed together.

The *Cynipidae* are perhaps generally known as Gall-flies, though some are parasitic on other insects. It was once supposed that the galls we all so frequently see on some trees were of purely vegetable origin, though now their true hymenopterous cause is known to most school-boys. The author of the first book under

notice has thoroughly discussed the bionomics of these interesting insects, and has produced a work which is very much more than a mere description of species, and one which will afford much valuable information to the botanist as well as the entomologist. L'Abbe Kieffer has treated his subject very thoroughly, and has provided good bibliographical references to what other workers have written on the subject. The volume is enriched with twenty-seven plates, and may be described as a book for all interested in galls and Gall-flies.

Mon. André's volume is devoted to a large subfamily of fossorial Hymenoptera, more or less parasitic in habits, and exhibiting a marked dissimilarity between the sexes. It thus appeals to entomologists as a rule, and to hymenopterists in particular. To those zoologists, few indeed!, who follow Darwin and Wallace—most frequently at a distance—in an encyclopædic or universal survey of the science, such a book escapes from the restricted study of the specialist, and becomes material for great generalizations. This is not the purpose, but is probably the true salvation of a monograph, and marks its general canonization. To know everything about one subject, and a little about all, is perhaps the only possibility of scholarship, and is too frequently the despair of a zoologist. Mon. André's book is a good brick for such an edifice, and is distinctly a treatise which will be studied by the specialist.

EDITORIAL GLEANINGS.

THE 'Zoological Record' for 1901, edited by Dr. David Sharp, F.R.S., &c., was published towards the end of the year 1902. It forms a bulky volume, and is the best evidence we have of zoological enterprise and industry. The vast growth in zoological publication is shown by a paragraph in the preface. In 1871 the list of periodicals inserted by Professor Newton numbered 201, and occupied less than six pages, whilst in the volume for 1901 upwards of 1000 are enumerated, and account for 52 pages. The number of new generic names registered in 1870 was a little more than 700; for 1901 no fewer than 2102 are recorded. The numbers of papers published relating to different Orders give some idea of the present trend in zoology:—

TITLES.

Mammalia	...	...	...	...	...	861
Aves	...	...	...	...	...	803
Reptilia and Batrachia	...	...	...	...	...	250
Pisces	...	...	...	...	...	244
Mollusca	...	...	...	...	...	675
Brachiopoda	...	...	...	...	...	98
Crustacea	...	...	...	...	...	268
Arachnida	...	...	...	...	...	217
Insecta	...	...	...	...	...	1514

Dr. Sharp has made one reform in his subject-index for which we are deeply grateful. The word "mimicry" once denoted a philosophical conception; a few enthusiastic writers seem determined that this shall be no longer possible. The Editor of the 'Zoological Record' prefers the use of the word "resemblance."

We have received a reprint from the 'Transactions of the Hull Scientific and Field Naturalists' Club' of a paper entitled "The Birds of Bempton Cliffs," by E. W. Wade. This is a beautifully illustrated brochure relating to the famed chalk cliffs of the East Riding, the birds found there, and the adventurous men who pursue the "dreadful trade" of egg-collecting from the face of the cliffs. It can be purchased separately at a small cost.

OUR well-known contributor, Mr. Robert Service, of Maxwelltown, Dumfries, has sent us a revised copy of his "Vertebrate Zoology of Kirkcudbrightshire," reprinted from Maxwell's Guide-Book to the Stewartry of Kirkcudbright. As the author remarks—"Probably there is no other tract of similar extent in the British Islands wherein may be found so rich an assemblage of vertebrate animals as there is in Kirkcudbrightshire." To a zoological visitor this publication is a necessity, and, what is more, an exhaustive and trustworthy acquisition.

At the Annual Meeting of the Yorkshire Naturalists' Union, held at Hull on Wednesday, the 10th December, Mr. W. Denison Roebuck, F.L.S., was presented with a handsome testimonial in recognition of his past services as Secretary of the Union, and Editor of the 'Naturalist.' The presentation took the form of a beautifully illuminated address, in book form, and a clock and bronzes. References were made by many speakers to the ability with which Mr. Roebuck had worked in the interests of the Union. The new Secretary is Mr. T. Sheppard, F.G.S., of the Municipal Museum, Hull, and the 'Naturalist' will in future be edited by Mr. Sheppard and Mr. T. W. Woodhead, F.L.S., of Huddersfield. The President for 1903 is Mr. Roebuck.

THE following is the latest contribution to the tale of the great Sea Serpent?—narratives which we propose to regularly chronicle, without comment, for future comparison and digest.

Extract from the log of the second officer of the s.s. Fort Salisbury:—
October 28, 1902, 8.5 a.m.—Dark object, with long, luminous trailing wake, thrown in relief by a phosphorescent sea, seen ahead, a little on starboard bow. Look-out reported two masthead lights ahead. These two lights, almost as bright as a steamer's lights, appeared to shine from two points in line on the upper surface of the dark mass. Concluded dark mass was a whale, and lights phosphorescent. On drawing nearer, dark mass and lights sank below the surface. Prepared to examine the wake in passing with binoculars. Passed about forty to fifty yards on port side of wake, and discovered it was the scaled back of some huge monster slowly disappearing below the surface. Darkness of the night prevented determining its exact nature, but scales of apparently 1 ft. diameter, and dotted in places with barnacle growth, were plainly discernible. The breadth of the body showing above water tapered from about 80 ft. close abaft, where the dark mass had appeared to about 5 ft. at the extreme end visible. Length roughly

about 500 ft. to 600 ft. Concluded that the dark mass first seen must have been the creature's head. The swirl caused by the monster's progress could be distinctly heard, and a strong odour like that of a low-tide beach on a summer day pervaded the air. Twice along its length the disturbance of the water and a broadening of the surrounding belt of phosphorus indicated the presence of huge fins in motion below the surface. The wet, shiny back of the monster was dotted with twinkling phosphorescent lights, and was encircled with a band of white phosphorescent sea. Such are the bare facts of the passing of the Sea Serpent in latitude 5 deg. 81 min. S., longitude 4 deg. 42 min. W., as seen by myself, being officer of the watch, and by the helmsman and look-out man.—A. H. RAYMER, Second Officer.

Mr. S. G. Stephens (master of the Fort Salisbury) writes in reference to Mr. Raymer's narrative: "I can only say that he is very earnest on the subject, and certainly has, together with look-out and helmsman, seen something in the water of a huge nature as specified."—*Daily Mail.*

THE development among animals, and especially among birds, of purely ornamental wind-bags, used as adjuncts in courtship, forms the theme of an article in 'Knowledge' for January, by Mr. W. P. Pycraft, who writes:—"These wind-bags, which, almost without exception, may be inflated and deflated at the will of the animal, differ much in the nature of their origin. . . . Take the Common Pigeon, for example. Could anything appear more silly than the strutting, bowing, and cooing of the cock aided by this very practice of filling his gullet with intoxicating draughts of the morning air, the which swell his neck to unduly large proportions, and apparently, on this account, make him so much the more fascinating? With the Pigeon tribe, no special receptacle is provided for the indrawn air. . . . The present greatness of the crop, we would point out, is due not so much to the efforts of the prancing bird as to the care and selection of the breeder. . . . A still more remarkable gullet pouch is that of the Frigate-Bird of the Tropics. Bare externally, of a vivid scarlet colour, and capable of being inflated till it is nearly as large as the rest of the body, this pouch is an invaluable asset to its possessor when seeking a mate. For here, as elsewhere, the successful suitor is he who makes the most of his peculiar charms; the prize falling to him who is able to display the biggest and most brilliantly coloured pouch. Only the males wear this ornament, which is retained only during the breeding season. At this time a lively competition appears to take place, a

dozen or so of these birds crowding together in a tree, and greeting the approach of their prospective mates with inflated pouches and drooping wings, accompanied by a peculiar apology for a song, described as a sort of 'wow-wow-wow-wow,' and a noise resembling the sound of castanets, which is made by a violent chattering of the horny beak. The pouch of the Frigate-Bird is formed by the upper end of the gullet, and appears to be closed behind by a peculiar arrangement of muscular fibres to form what is known as a sphincter muscle. These muscles close up the tube of the windpipe much as the mouth of a bag is closed by means of a double string."

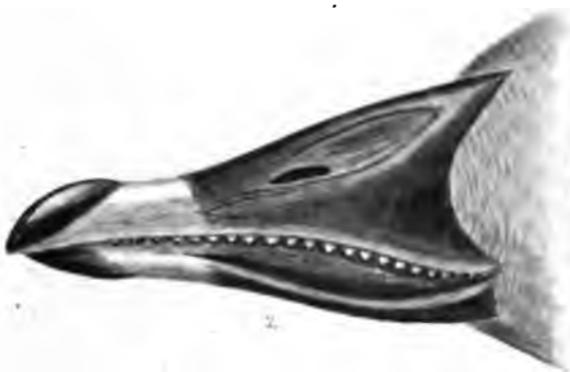
MR. J. L. BONHOTTE, in "Field Notes on some Bahama Birds," published in the January issue of the 'Avicultural Magazine,' has given a good illustration and some interesting notes on the nesting of the Flamingo in those islands.

THE last November issue of the 'Irish Naturalist' is devoted to a special report of the recent meeting of the British Association at Belfast.

THE following excerpt is from an article by Cary Coles in the 'Farmer and Stockbreeder Year Book for 1908':—

"As a proof of the hardihood and prolificness of Hampshire Downs, I will give the result of the Shepherd's Prize Competition of the Hampshire Down Sheep Breeders' Association for 1902:—Dec. 1st: 56 flocks, containing 26,785 ewes in the usual proportion of mixed ages, were entered, and on May 4th the decrease by death or sale 2·84 per cent. only, and the increase of lambs 116·82 per cent. on the ewes entered Dec. 1st, 1901. The results from 47 flocks of ewe tegs for the same period are also a very good illustration, the number entered being 8886, and the total decrease between Dec. 1st and May 4th, 64 sheep, only .72 per cent.; and I know as a certain fact that this number practically, as far as losses by death are concerned, should have been reduced to 54, as I sold ten ewe tegs from my flock entry that were shipped to United States in April; otherwise there was no loss in my tegs or in sixteen of the other flocks during the five months. In one flock of Hampshire ewes, principally six and seven years old sheep, their prolificness as published in the 'Farmer' was, I certainly think, remarkable, they breeding at the rate of 175 per cent. of lambs from about 200 ewes. Previous to its being published, I heard of this privately from an eminent Hampshire Down breeder, who saw the ewes with their lambs."

BRITISH BEAN-GEE-ESE.
1, 2.—*Anser segetum*, ♂. 3, 4.—*Anser arvensis*, ♂.



THE ZOOLOGIST

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BRITISH BEAN-GEESE.

By F. W. FROHAWK.

(PLATE II.)

IN his article on *Anser paludosus* (Zool. 1902, p. 441), Mr. Coburn disagrees with my statements published in the 'Field' * on the Bean-Geese (*Anser arvensis* and *A. segetum*), illustrated with the figures of the bills of these birds, which I now reproduce with the kind permission of the proprietor of that journal.

Before alluding to Mr. Coburn's remarks, I may briefly state my reasons for arriving at the conclusions I still maintain regarding the specific differences of these Geese. More than a year ago Mr. Serge Alphéraky, the distinguished Russian zoologist, honoured me with his express desire to illustrate in colour his great work on the 'Geese of Russia,' which necessitated not only voluminous correspondence passing between us on this group of birds, but the most careful examination of all specimens procurable, the result being that our notes agreed on all points of interest we found it necessary to comment upon. The enormous mass of material, amounting to all the available works published on the Geese, and the great number of specimens Mr. Alphéraky has examined, enable him to speak authoritatively on the subject, and the Bean-Geese received his most critical attention. I may say that his views on these birds agree precisely with my

* October 4th, 1902, p. 605.

own; in fact, this naturalist called my attention to the confusion existing respecting *A. arvensis* and *A. segetum* having been so long confounded as one species. To quote from his letters on the subject, he says :—" I should much like to know which is the Bean-Goose of Great Britain; I am sure that under the name of *A. fabalis* two very distinct species are confused by Count Salvadori ('Cat. of Birds,' xxvii.), one being *segetum*, the other *arvensis*." In a subsequent letter he states :—" It is true that I was quite sure that both *arvensis* and *segetum* (two very good species) must occur in England, but how could I prove it? It is only through your kindness that I learn that is a fact." And again Mr. Alphéraky says :—" I am sure that although you have in Great Britain *A. segetum* as a winter bird, it must be with you a scarce bird, as it is, according to my investigations, everywhere in Europe. I suppose that in general, to every hundred *arvensis* there exist in the world but one or two *segetum*. Such is my impression, based on a goodly number of skins from different parts of Europe and Asia. I suppose that you will find but very few British-killed specimens of *segetum* in your collections, and that *arvensis* is the Bean-Goose *par excellence* of your country in winter."

Respecting the scarcity of *segetum*, Mr. Coburn (p. 446) remarks :—" It has been suggested to me that *A. paludosus* may be identical with Brehm's *A. arvensis*. A paper on the latter bird has quite recently (October 4th, 1902) been communicated to the 'Field' by Mr. Frohawk, who endeavours to prove that this is the common Bean-Goose of our land. I cannot at present agree with him on several points he raises."

From my investigations I have every reason to believe that *segetum* is much the rarer of the two species, which is the opinion of others, among whom I may mention such experienced wildfowlers as Mr. Caton-Haigh; and Mr. J. M. Pike tells us, in the 'Field,' Dec. 20th, 1902, that during thirty years' punt-shooting he has only occasionally come across *A. segetum* out of many hundreds of freshly killed Grey Geese.

Mr. Coburn admits the similarities existing between his *paludosus* and *arvensis*, and I must confess, from the photo reproductions which accompany his article, that the pattern of colouration and the proportionate size of the nail in the bill of

paludosus agree very closely with *arvensis*; but as the laminæ cannot be counted in the figure, and Mr. Coburn omits giving the number in his description, and without actual examination of the specimen, I will not express an opinion of its identity more than to say it resembles *arvensis* closely, as will be seen by comparing the bills in the two plates. But there is one point of difference shown: the white band of feathers at the base of the bill in *arvensis* is absent in Mr. Coburn's bird, according to the figure, unless it is the pale space between the dark band along the culmen and the forehead; but this is not clear enough in the figures to make out, although Mr. Coburn says that it is "curiously exaggerated by the camera in figure" (p. 445).

Mr. Coburn makes special allusion to the length of neck in his stuffed *paludosus*, and seems surprised that I made no mention of the long neck and swan-like feet in *arvensis*. Surely Mr. Coburn must be aware of the danger of attaching much importance to the length of the neck of a stuffed bird. He says (p. 444):—"For their portraits to be taken the birds were placed opposite each other on exactly the same level, so that a glance will show the extraordinary disproportion in the length of neck in each bird." There seems to me nothing remarkable in this excepting what applies to the taxidermist's art.*

Mr. Coburn also calls attention to the proportionate size of the nail in *paludosus*, saying it is "larger in proportion than that of *A. segetum*." I think if he measures the nail in each figure he will find he is wrong. The figure he gives of *segetum* is not that of a typical bird as regards distribution of colour in the bill, although, as I have pointed out in the 'Field,' the colour, as well as the number of laminæ, are liable to vary; but the colour varies most. On this character Mr. Coburn considers I arrived at too hasty a conclusion, but perhaps he did not read the last paragraph in my article, where he will find I said:—"There is, of course, a certain amount of individual variation in each species, but the characters pointed out hold good in each, especially the great difference in the comparative size of the nail."

Respecting the variation in the bills of both *arvensis* and *segetum*, I will give an extract from a letter recently received

* Mr. Coburn in the following paper (p. 47) details his method of mounting these birds.—ED.

from Mr. Alphéraky on the subject, which I think will prove very interesting :—" In the younger *A. arvensis* (let us say up to four or five years) the black and orange of the bill is disposed very much in the same way as these two colours are disposed in *segetum*. And this is the reason why the great confusion has arisen. The colouring being similar, people could not distinguish the two species. In such cases the form of the bill and the proportions of the nail to culmen will always (I think) help to settle the question, and often the number of teeth will also serve as a sure guide in difficult cases."

I have lately had the opportunity of making a careful examination of four freshly killed specimens of *segetum*, shot in Holland by Mr. J. M. Pike, who at once forwarded them to the British Museum. He says :—" We obtained five specimens out of a small family of six Bean-Geese. These turned out to be all well-marked examples of *A. segetum* in two old birds and three young ones." The following gives the length of bill along culmen, including the nail, and number of laminæ of these four specimens, which are true *segetum*, having the large elliptical nail so characteristic of the species, which in *arvensis* is proportionately much smaller and rounder :—

1. Ad. ♂. Laminæ each side, 21. Bill, $2\frac{3}{8}$ in.
2. ♂. Laminæ each side, 24. Bill, $2\frac{5}{16}$ in. .
3. ♀. " 21. " $2\frac{3}{8}$ in. .
4. ♀. " 22 left side, 21 right. Bill, $1\frac{1}{2}\frac{1}{2}$ in.

Although considerable variation exists in these four birds' bills, they are quite distinct from *arvensis*, both in form, colouration, size of nail, length of bill, and number of laminæ. Mr. Alphéraky agrees with me in saying the number of laminæ in *segetum* varies, attaining to as many as 24 in some specimens, just as occurs in *A. brachyrhynchus*, and states that he has a specimen of *segetum* from Kulguev with 24; but in the great majority of specimens of both *segetum* and *brachyrhynchus* the number is from 20 to 21.

The chief points of difference between *segetum* and *arvensis* will be readily seen by reference to the accompanying plate and following descriptions :—

Fig. 1, *Anser segetum*, ♂.—Bill (upper view) : average length of culmen about $2\frac{1}{2}$ in.; nail large and elliptical—the nail has a different length in proportion to the total length of the bill in the

two species, included in the total length of culmen three and a half times ; colour black, with only an orange band between the nail and nostrils in typical specimens, but the orange, as I have remarked, is subject to variation in distribution in a more or less degree, sometimes extending below the nostril, but this varies according to age.

Fig. 2, side view of same.—Culmen considerably curved, lower mandible deep and swollen about the basal third ; average number of laminæ along each edge of upper mandible from 20 to 21 ; colour black, with orange band encircling bill in front of nostrils ; nail and corresponding portion of under mandible black. As a rule, no white feathers at the base of bill, excepting in old birds, when a small frontal patch of greyish white may occur.

Fig. 3, *Anser arvensis*, ♂.—Bill (upper view) : length of culmen rather over $2\frac{1}{2}$ in. ; nail proportionately small and rounded, included in the total length of culmen four and a half times. Orange colour extending nearly over the whole of the upper mandible, having only a black bar commencing in front of the nostrils, and running along the culmen to the base, where it becomes paler.

Fig. 4, side view of same.—Straighter than that of *segetum*, and the lower mandible less swollen ; average number of laminæ about 28 along each edge of the upper mandible ; a few at each end are very small, and hidden from view by the overlapping edge when seen from the side only. Upper mandible almost wholly orange, excepting the black nail on bar and along the culmen, and one or two irregular blackish streaks on the sides. Lower mandible : end black, anterior two-fifths orange, remainder black ; conspicuous band of white feathers extending along the whole basal edge of upper mandible.

ON THE SPECIFIC VALIDITY OF *ANSER RUBRIROSTRIS* (HODGSON), AND ITS POSITION AS A BRITISH BIRD.

By F. COBURN.

THE specific validity of this bird appears to have exercised the minds of systematists very considerably from 1844 until the present day. It was in this year (1844) that Gray first separated the bird from *A. cinereus*, and called it *A. erythropus*, probably from its red legs; but this name properly belonged to the Lesser White-fronted Goose. In the same year Hodgson, recognizing the many characters which separate the bird from *A. cinereus*, first named it *A. rubrirostris*, from the curious red colour of the bill, upon which I shall dilate further on. Hodgson's name was recognized by Taczanowski in 1877, but Adams in 1859, and Swinhoe at various dates from 1861 to 1870, named it *A. ferus*. In 1871, however, Swinhoe recognized the bird as *A. cinereus* var. *rubrirostris*, being followed by Dybowski in 1873-4, Prjevalsky in 1878, and Seebohm in 1885. Severtssoff, in 1875, named it *A. cinereus* β *subalbifrons*, probably from the very distinct but narrow band of white at the base of forehead and sides of bill. Finally—and without following the full synonymy—Count Salvadori, in the Brit. Mus. Cat., Birds, vol. xxvii. p. 91 (1895), fully recognizes Hodgson's name, and establishes the bird as *A. rubrirostris*. This decision, however, does not appear to have met with very general acceptance by British ornithologists, some still considering the bird to be but doubtfully distinct. It will be my purpose in the present article to endeavour to prove its specific validity, and its occurrence as a rare visitor to Great Britain.

It was on Nov. 28rd, 1901, that I received from Limerick, Ireland, five Grey-lag Geese, which instantly struck me as possessing peculiar characters I had never noticed in these birds before. They looked unusually large in size, very pale in their general colouration, an unusually large amount of black on the under parts of the adults, and a very distinct and sharply defined

but narrow band of pure white at base of forehead and sides of bill, present in both adults and immature. But it was the very curious colours of the soft parts which caused me to ponder most, and to still more critically examine my birds, comparing them with my series of *A. cinereus*, and with fresh specimens of this bird. This was before skinning my five specimens; and I now made the important osteological discovery that the wings in all of them did not reach the end of the tail by over one inch! whereas in *A. cinereus* the wings not only reach the end of the tail, but, if anything, slightly overlap. Upon investigating this matter as fully as I could, I felt fairly confident that my birds must be *A. rubrirostris*, and that this one osteological character ought to be sufficient to definitely separate the bird from its near ally. When I state that the wing in the adult male gave the great measurement of 19½ in. against 18 in. in the largest specimen of *A. cinereus* in my series—a bird I have always regarded as being a very large one—it will be readily understood that the fact of this long wing not reaching the end of tail by over one inch gives to *A. rubrirostris* a much longer and slenderer form than *A. cinereus*. This is instantly and strikingly manifest when the mounted birds are placed side by side, and one can see from structure alone that they are distinct birds. I may here say that all my wildfowl are mounted by me; I do not allow any of my assistants to touch them. Consequently all are mounted upon one principle, that being my own. I thoroughly study the anatomy of my specimens, and replace in the skin an exact copy of the body I take out; consequently I get perfect proportions to every bird, and any anatomical peculiarities are bound to show themselves. It is important that I make this statement, otherwise it might be said that this slenderer form was due to the mounting. I feel quite confident that this slender form to a large bird would be quite apparent if the living bird were seen side by side with *A. cinereus*.

I took the adult male of my five specimens, together with another Wild Goose—noticed in a separate paper*—to the British Museum, and compared it with the series of *A. rubrirostris* in the National Collection, the result fully satisfying me that my identification was correct. Some of the Indian skins

* *Anser paludosus* (*ante.* 1902, pages 441–8).

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were somewhat paler in the colouration of the body plumage, but it can be readily understood that birds coming so many thousands of miles from their usual habitat would be likely to show some modification in their colours. The general types of character are present in all five of my specimens.

I exhibited this bird before the June meeting of the British Ornithologists' Club, and pointed out its distinctive characters. In the discussion which followed, Mr. Stewart Baker, an authority on Indian birds, fully confirmed my identification, and gave some valuable information as to the colours of bill and legs in living specimens.

I will now give a full description of the colours of the adult male, comparing them with my finest adult male *A. cinereus*, one of three, also received from Limerick, and from the same man who sent the *A. rubrirostris*, but in January, 1896. The same type of colouration runs through the entire series of both species, so that the one can be followed just as easily as the other; in fact, they cannot be mistaken.

Anser rubrirostris. Adult male. Received from Limerick,
November 28th, 1901.

Head and neck a delicate and beautiful shade of dove-grey gradually becoming paler on breast and under parts until the abdomen and under tail-coverts become pure white. From the lower neck to abdomen there are numerous broad patches of black, almost as black as in some specimens of *A. albifrons*. The flanks commence with the same delicate dove-grey, gradually increasing to a hoary slate, margined with pale drab and pure white. The mantle is hoary slate, gradually increasing to deep umber on the longest scapulars, all margined with drab. Back and rump a bluish slate. Upper tail-coverts white. The tail has the centres of the feathers hoary slate, fringed and broadly tipped with white, the white increasing until the outer feathers are reached, the two outer ones being almost entirely white. Outer wing-coverts very pale French grey, almost white; medians pale slaty drab, margined all round with dull white. Primary coverts have the shorter ones hoary slate, fringed and margined with white, the longer ones a velvety hair-brown, distinctly fringed and margined with white. Primaries hoary slate,

becoming almost black towards tips, the rib white. Secondaries black, delicately pencilled round with white. Tertiaries blackish umber on the inner half, outer half rich velvety hair-brown, margined with white. Alula palest French grey. Under wing-coverts and axillars pale French grey, almost white. The description of the plumage will be complete by repeating that at the base of the bill, on forehead, and at sides there is a narrow but sharply defined band of pure white feathers. This brings me now to the important soft parts, these differing totally from the other bird. The bill commences with a sharply defined crescentic-shaped band of bright scarlet lake;* from this, along culmen to nail, it is a dull crimson lake, the sides (including nostrils) dull orange-yellow, nail white. Lower mandible dull crimson, white at tip. Gular sac dull orange-yellow. Eyelid reddish brown; iride dark hazel. Legs and toes a deep reddish pinky, almost terra-cotta red. Webs darker, and nails nearly black. Length, 33½ in. to end of tail, 34½ to end of toes. Wing, 19½ in. Weight, 8 lb. Wings do not reach end of tail by over 1 in.

Anser cinereus. Adult male. Received from Limerick,
January 14th, 1896.

Head and neck a brownish drab, gradually becoming a lighter drab towards breast and under parts, which are almost white, becoming pure white on lower breast, abdomen, and under tail-coverts. The under parts, across middle of breast only, sparingly blotched with black. The flanks commence with pale drab margined with lighter, and gradually become a dark umber margined with drabbish white. The mantle is a dark umber-brown, margined with pale dirty drab. Some might describe the mantle as a dark hair-brown. Back and rump a dark bluish slate. Upper tail-coverts white. Tail-feathers have the centres dark brownish slate, fringed and deeply tipped with white, the white increasing outwards, the three outer ones being almost entirely white. Outer wing-coverts French grey, with darker ribs, gradually becoming darker towards the medians, which are a slaty umber margined with dull white. The primary coverts are hoary slate margined with white for the shorter ones, pale umber margined

* Confirmed by Dr. Radde, cf. Dr. Bowdler Sharpe's 'Handbook of British Birds,' vol. ii. p. 229.

with drabbish white for the longer ones. Primaries hoary slate, becoming almost black towards end, ribs white. Secondaries a brownish black, delicately fringed with dull white. Tertiaries a blackish umber on the inner half, dull hair-brown margined with paler on the outer half. Alula French grey. Under wing-coverts French grey, with darker ribs. Axillars dark French grey. At the base of the bill on forehead there are a few ill-defined dirty-white feathers.

In all standard works the bill of this bird is described as fleshy white; and so it is after the birds have been dead for some time; but those I shot in Iceland, and which I picked up and examined before they were cold, had the bills a dull orange-yellow. This I have found to be the case with other specimens of this bird I have examined here while quite fresh. It may therefore, I think, be taken for granted that the correct colour of the bill in this species is dull orange-yellow, and not fleshy white. The legs and toes are correctly described when they are said to be pinky or fleshy white. Nails pale umber. Eyelid a pinky flesh; iride dark hazel. Length to end of toes, 85½ in. Wing, 18 in. Weight, 8½ lb. Wings reach slightly over end of tail.

The immature *A. rubrirostris* differs from the same stage in *A. cinereus* in several important points, but it will only be necessary to mention the colours of the soft parts. In the former the bill is a pale yellow, and the legs and toes a bright Naples yellow. In the latter the bill is a dull yellow, and the legs and toes a brownish flesh.

It will be seen from these descriptions, but much more vividly when the birds are looked at, that the general appearance of the two species is totally distinct, both in colours and build—so distinct that it seems impossible that any practised eye could glance over them and fail to notice it. The general tone of colouration in the plumage of *A. rubrirostris* is a delicate dove-grey and hoary slate; in *A. cinereus* a brownish drab and brownish umber; in short, slate colour predominates in one, brown in the other! Add to this the remarkably distinct colouration of the soft parts, and the structural features I have pointed out; then I think there need not be the faintest hesitation in accepting the bird as a perfectly valid species.

I was much pleased that Mr. Stewart Baker so completely corroborated my observations on the colours of the soft parts ; he added the valuable information that he had seen specimens in which the red of the bill was running in streaks or veins into the yellow of the sides, thus showing that at certain times the bill may be entirely red, as was the case with one of my specimens.*

At the meeting of the British Ornithologists' Club a question was incidentally raised as to why this bird had been called the "Red-billed Grey-lag." A few words of explanation on this point are necessary.

During the past winter (1902) the late Mr. Ernest C. Tye, an ardent wildfowler, and whose subsequent untimely death I deeply deplore, had a friendly chat with me, when I mentioned the great numbers of Wild Geese which I had secured, incidentally naming the "Red-billed Grey-lag," but not thinking for a moment that he would consider my chatter of sufficient importance to publish. This, however, he did in his column of the 'Shooting Times' for March 1st, 1902, and this caused some correspondents of the paper to inquire what bird the Red-billed Grey-lag could be ; to which I replied. I can see no reason whatever why the bird should not receive this as its common name ; it is quite appropriate and distinctive, and I propose that it should be known as the

RED-BILLED GREY-LAG, *Anser rubrirostris* (Hodgson).

The Grey Geese have been a puzzle to ornithologists from the earliest times, their affinities running so close that the species have not been properly discriminated ; it needed the sharp eye of Bartlett to point out the characters which separate *A. brachyrhynchus* from *A. segetum*, while this latter was for long confused with *A. cinereus* ; but slight though these characters are, everyone now rightly admits its specific validity. Quite recently *A. neglectum* has been separated upon even more slender characters ! These facts must not be overlooked in discussing this question ; and Mr. J. H. Gurney's words, when speaking of the White-fronted Geese (*cf. 'Ibis,'* 1902, p. 272), are very significant and much to the point :—"And so long as the slightest difference in colour—even to the colour of an eyelid—can be found, combined (as it is in this case) with some difference of habitat, surely such birds

* The adult female.

ought to be kept asunder." These words certainly apply with great force to the case of *A. rubrirostris*.

Anser rubrirostris is an Eastern species, breeding in Siberia, and wintering in India and China. It may be asked by some, how such birds could have wandered so far from their usual course. No surprise, I think, need be expressed on this score. I have already pointed out, while discussing the case of *Anser gambeli*, that many birds are varying their lines of migration, and seeking "fresh fields and pastures new." Plenty of other birds come to us occasionally from Eastern Siberia, and why not *A. rubrirostris*? The very same time that this presumably small flock of Geese came to our shores, a Baer's Pochard (*Nyroca baeri*), from the same regions, made its appearance on Tring Reservoir! (cf. Bulletin, British Ornithologists' Club, November, 1901), and fell to the gun of the Hon. Nathaniel Charles Rothschild; thus showing that there was a divergence in the line of migration of Eastern birds at that time, and that probably other specimens of Baer's Pochard came to us, but were overlooked.

I do not regard *A. rubrirostris* as an overlooked British bird, but as a very rare visitor which has probably never occurred before. I have taken a keen interest in the Ducks and Geese for a great many years past, and I certainly think that this bird has never before occurred within my memory. Four other specimens were sent a few days later from the same man at Limerick, but I deeply regret to say that I had not then fully made up my mind as to the identity of the species, and, not wanting to have such a large number of these great birds in my collection, allowed them to pass from me. They were plucked and devoured! However, all other Grey Geese which were sent by this man from Limerick for the rest of the season I examined, and they were all *A. cinereus*. From this we may conclude that one flock of these birds visited Ireland, out of which nine were shot. The birds remained through November, when, if any of their numbers survived, they departed, probably never to return again. Nine of these birds having fallen to the gun within a few days points to the fact that they were strangers from a far-off land where they did not fear man, as our wary Grey-lags have learned to do.

NOTES ON THE SEAL AND WHALE FISHERY OF 1902.

By THOMAS SOUTHWELL, F.Z.S.

At the last moment, after the bulk of the men had "signed on," the sealing voyage of 1902 was in danger of being ruined by one of those modern trade disasters known as "strikes"; the men, to the number of some three thousand, refused to join their ships, or to allow others to do so, except on terms which it was impossible for the owners to grant; but happily, by the intervention of the Governor, and by mutual concessions, this calamity was averted, and the ships left fully manned after very little delay.

Much uncertainty existed as to the probable locality in which the young Seals would be found, as no ice was to be seen from the land, and it was thought that they would haul up on the heavy arctic ice farther from the shore, which indeed proved to be the case. The absence of ice on the east coast has by some been thought to be due to a change in the direction of the set of the Gulf Stream across the Atlantic, and to this also is attributed the undoubtedly milder winter climate which has been experienced of late in Newfoundland.

The first vessel to return was the 'Newfoundland,' which arrived on the 23rd March, after a very unfortunate voyage, with only 305 Seals on board. In forcing his way through the heavy arctic floe which Captain Farquhar met with, he unfortunately carried away the vessel's stem, necessitating his return, and the abandonment of the voyage.

The experience of the 'Leopard' may be taken as typical of the eastern fishery. She departed on the 11th of March, and made direct for Funk Island, encountering the loose ice on the 18th, and a few Whitecoats about forty miles N. by E. of that island; but, a gale coming on, she was jammed in the ice, and no more Seals were met with till the 17th. On the 18th the main

body of the Seals was struck about fifty miles N.E. of the southern patch, and work commenced. The ice is described as the worst ever seen ; huge arctic pans were met with, and the whelping-ice was so thin as to be dangerous, constantly opening, and with "slob" in abundance—altogether different from the conditions usually experienced ; "a tremendous swell was among it, and pans would split and tear asunder, throwing men into the water without warning. It was highly dangerous work, and the crews were forced to keep together." On the 22nd March the 'Leopard' finished killing, but experienced very heavy weather on the return voyage to St. John's, where she arrived on the 27th of March with 12,440 young Harps of excellent quality ; the fat was said to be over four inches thick, and the pelts weighed from 65 to 81 pounds. Although at the date when killing ceased the young Seals were rapidly taking to the water, their fine condition is advanced as a proof that a day or two's delay in the departure of the vessels would be beneficial to all.

Equally bad weather was experienced at the Gulf fishery. The 'Harlaw' left Channel (Basque) on the 10th of March, and four days later struck a patch of Hooded Seals near Deadman's Island ; but, as several schooners were there, and the patch not a large one, she went in search of the main body of Harps, which she discovered off Meat Cove. The greatest difficulty was experienced in getting the Seals, as the state of the ice was such as to make venturing upon it very dangerous, and the swell was too great to permit of using boats ; about 8000 young Harps were, however, secured, when a hurricane came on, and she had to run for shelter to the Magdalen Islands, leaving thousands of Seals, all of large size, on the ice. The catch of the 'Harlaw' was some 8000 young Harps, and about 1000 old and 500 young Hoods, which are estimated to be equivalent to 13,000 young Harps. Other vessels suffered by the terrible weather experienced in the Gulf ; the 'Algerine' had a large number of Seals panned, of which she secured some 3000, but had to run for shelter to Prince Edward's Island, and the remainder were all lost to her ; many Seals were washed ashore on Prince Edward's Island, which doubtless were part of those killed by the 'Algerine.'

No vessels were wrecked this year, but the 'Newfoundland,'

as previously stated, practically lost the voyage through injuries received in the ice; the 'Nimrod' narrowly escaped being jammed ten miles off Gull Island, and was beset for fourteen days, losing a large number of panned Seals. The 'Terra Nova' and the 'Walrus' both returned with flags half-mast; the former lost a man from pneumonia, and the latter, in addition to losing one of her crew by death, landed an insane man at Bird Island Cove. These events were sad, but, in view of the risk and hardship to which 3978 men were exposed, the casualties must be considered slight.

The sealing fleet of this season was increased to twenty by the addition of the 'Erik'; 274,539 Seals were landed, valued at £80,525, the average number for the whole fleet being 13,727. Ten vessels secured more than this average, and ten less; nine had more than 15,000, and two less than that number, but over 10,000; the remainder were poorly fished, averaging only 5392. The 'Vanguard' headed the list with 25,707. The Seals were of excellent quality, even better than in the previous season, for although 70,849 fewer in number, their net weight was only 501 cwt. less; but the market for produce is not encouraging.

The Whale Fishery in the Greenland Seas has become quite a thing of the past, and in Davis Straits, the season of 1902 has been remarkable, even in this inclement sea, for weather of almost unexampled severity; the success of some of the vessels, too, was sadly marred by the disasters to others. Capt. Milne, of the 'Eclipse,' learned from the Esquimaux that a small vessel hailing from London, named the 'Perseverance,' left Cumberland Gulf on the 22nd of October, 1901, but has not since been heard of, and it is feared that she has been lost with all hands. The 'Alert' also, the last of the Peterhead vessels, a brig attached to Nobles' Station, sent out to bring back produce from the station at Cumberland Gulf, was wrecked there in September last, but happily her crew was saved and brought home by the 'Kate,' another small vessel in the same service, which had wintered there. Against this it is satisfactory to be able to state that the 'Forget-me-not,' a Yarmouth trawler, mentioned in my last notes as missing, arrived safely at St. John's, Newfoundland, on the 24th of September, having wintered in the pack-ice in

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Frobisher's Bay (where she was beset in September, 1901); she was extricated from the ice and set on her way by the 'Windward (Peary Expedition). The crew communicated with the Esquimaux, and were very successful in hunting Walrus and Musk Ox; but their voyage to St. John's was a very perilous one.

From the first the whalers met with terrible weather. Early in May the 'Eclipse' ran on a rock near Disco, and, badly damaged, put into Holsteinborg for temporary repairs; but, more unfortunately still, during a fearful hurricane, accompanied by blinding snow, the 'Nova Zembla,' in running for shelter to Dexterity Fjord, on the west side of the Straits, went on the rocks, and became a total wreck. Her crew, forty-two in all, after a terrible experience, was rescued by the 'Diana' and the 'Eclipse,' which happily were sheltering in the same neighbourhood; but for this timely assistance in all human probability the crew would have perished.

Of the five steamers which left Dundee, we have only four to deal with, *viz.* the 'Active,' the 'Eclipse,' the 'Diana,' and the 'Balæna.' The first of these visited Hudson Strait, and brought back the produce of one small Black Whale (9 cwt. of bone), killed in the month of June; a second was killed, but lost in the ice. Whales were in plenty, but so great was the accumulation of ice that it was impossible to get at them. She also had 11 White Whales, 54 Walrus, 205 Seals, and 77 Bears.

The 'Eclipse,' as before stated, had an adventurous voyage. She left Dundee on the 12th April, and experienced very bad weather at the southern fishery. On the 4th of May, when in the vicinity of Disco, and in a blinding storm of wind and snow, she struck upon a submerged rock, where she remained firmly fixed for some time, notwithstanding the exertions of her crew, and in extreme peril of breaking up in the terrible sea which broke over her; but happily the sea itself worked their deliverance, and a great wave washed the vessel into deep water again. Although badly damaged, they were able to run for Holsteinborg, where the vessel was temporarily repaired. But even in this crippled condition the brave crew did not neglect the object of their voyage, for on the 10th of May, the gale having subsided, they took their first fish. Fourteen days were lost at Holsteinborg, and, then proceeding on their voyage, the second Whale

was secured on the 20th June; a few days later a third, and in another month, operations having been much hindered by the large amount of floating ice, a fourth was captured,—all large fish. Then came the terrible weather of September, and the incident which enabled them to render assistance to the crew of the stranded 'Nova Zembla,' after which the vessel returned to the fishing-ground, and was successful in capturing yet another fine Whale on the 5th October. Of her five Whales the bone of the largest measured 10 ft. 6 in., none of them being under 10 ft. The run home was without incident, being accomplished in fourteen days; and, although attended with great hardship, the voyage was very successful, resulting in 5 fine Black Whales, 6 Walrus, 8 Seals, 31 Bears (one of which, a young one, was brought home alive), yielding 57 tuns of oil and 70 cwt. of bone.

The 'Diana' was also successful at the spring fishing. On the 28th May she captured a very fine fish, the bone of which measured 11 ft. 6 in.; a second Whale was seen and unsuccessfully chased on the same day. Later on Capt. Adams (with Capt. Milne of the 'Eclipse') successfully rescued the crew of the 'Nova Zembla,' and finally his exertions were rewarded with four other fine Whales, returning to Dundee with 5 Black Whales, 1 White, 5 Walrus, 17 Seals, and 30 Bears, the total yield of which was 70 tuns of oil and 91 cwt. of bone.

The 'Balæna' was less fortunate than the sister vessels; she did not capture a single Black Whale, but her 640 White Whales are valuable; and, in addition, she had the produce of 14 Walrus, 4 Seals, and 17 Bears—the oil of the White Whales is estimated at 65 tuns. The 'Balæna' was so unfortunate as to lose one of her crew by death, which took place at sea on the outward voyage. With this exception the health of the various crews, notwithstanding the exceptional hardships of the voyage, has been remarkably good.

The total result of the season's fishing (including the produce of 39 Walrus, 1750 Seals, 13 Bears, and 10 tuns of oil brought home by the 'Kate' from the Cumberland Gulf station) was 12 Black Whales, 652 White Whales, 118 Walrus, 1984 Seals, and 168 Bears, producing 212 tuns of oil and 187 cwt. of bone. The market value of bone is very high, transactions having taken place at £2500 per ton. Oil is selling at £22 10s. per tun, and

White Whale skin is also high. The total value of the produce may be roughly estimated at, say, £32,420.

I have no special information as to the results of the fishery from the Norwegian ports, but I am informed that the Bottlenose fishery in the Greenland Seas has not been more than one-third of that of last year. The Greenland sealing, so far as the steamers are concerned, is virtually a thing of the past; but during the past season, owing to the prevalence of heavy ice throughout the summer, affording rest and shelter to the Seals, as well as facilitating approach to them, the small sailing vessels have done very well, some making two or even three voyages. In fact, the heavy ice, packed by the long-continued E. and N.E. winds, is said to have extended south in the North Atlantic quite to the Orkney and Shetland Islands, and a large ice-floe was reported off the Treshnish Islands, and on the west coast of Mull; whereas the east coast of Newfoundland, as previously stated, has been unusually free from ice.

An extraordinary migration of Seals, said to be Bearded Seals (*Phoca barbata*), and thought to have come from their breeding quarters in the White Sea, is reported on the northern coast of Norway, and the practical failure of the winter fishery in that locality is attributed to their presence. There is great consternation among the fishermen, and it is feared that the Lofodon fishery may suffer from the same cause.

Owing to the sad death of my valued correspondent, Mr. Michael Thorburn, I am largely indebted to his brother, Sir Richard Thorburn, and to the columns of the St. John's 'Evening Herald,' for the details of the past season's sealing voyage; and to Mr. Robert Kennis, of Dundee, for those of the Davis Straits fishery.

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE.
1899-1901.

By O. V. APLIN, F.L.S.

(Concluded from p. 22.)

1901.

January 3rd.—Ring-Dove cooing, as if it were spring.

7th.—About an inch of snow on the ground ; birds are already tame.

8th.—More snow.

9th.—About four inches on the ground. Over a hundred Starlings at the birds' feeding-place.

10th.—Mild again. Mr. Warriner told me that on the 5th he saw a large flock of Wild Geese in wedge-shaped formation, flying S.W., high up, over Bloxham Grove.

14th.—A few Bramblings at Tew. Wood-Pigeons cooing frequently during the day, and the keeper there said they had cooed regularly for the last three weeks. A dozen Goldfinches feeding in bunches of ash "keys," bits of which were falling down.

28th.—A charm of Goldfinches on the glebe farm.

27th.—Hard gale all day from W.N.W. ; torrents of rain and hail at intervals.

30th.—News from Mr. W. H. Warner of a Bittern shot at Ridge's Weir on the Isis (Oxon) on the 26th ; also of one shot at Duxford in January, 1895.

31st.—Saw two Curlews on the wing here.

February 2nd.—The largest flock of Fieldfares I have seen this season ; they have not been numerous.

5th.—Seven inches of snow on the ground.

7th.—Ten degrees of frost. Two Snipe in a ditch running through uplands at Milcomb.

8th.—Little flock of Linnets.

10th.—Slow thaw. Song-Thrush singing ; they have been

practically silent for some weeks, although there have been a few about all the winter.

12th.—Severe frost again.

16th.—Severe weather continues. A Robin's nest with six eggs found in an outhouse one day before the 14th.

21st.—Weather persistently cold, with wind in the N.; slight falls of snow and frost.

23rd.—Much milder.

25th.—Chaffinch singing for the first time.

26th.—Blackbird and Pied Wagtail singing.

March 1st.—Yellow Bunting singing. Mistle-Thrush pairing.

16th.—Song-Thrush's nest nearly finished. A cold stormy month so far.

17th.—Nice morning. Many Redwings; counted forty together, which flew away in company. One or two others singing the "trui trui trui."

20th.—Cold; N.E. wind and snowy the last two days. Saw a Chiffchaff for a moment as I was getting up.

23rd.—Still very cold. Some Bramblings; one fine old cock repeated the wheezy "weeech," so much drawn out as to approach the long note or song of the breeding season.

24th.—Some Meadow-Pipits.

25th.—Ground white with snow, and more fell during the day.

26th.—Nine degrees of frost; 27th and 28th, ten degrees, and froze all day.

29th.—Eleven degrees.

30th.—Mild and stormy. A very cold March.

April 1st.—Two Chiffchaffs in the warm spot by the brook, which I always search for early ones.

2nd.—Mr. Warriner sent over an adult Kittiwake, which he had found in an exhausted condition near his house; weighed 8½ oz.

4th.—Two Wheatears.

5th.—Blackcap in garden.

8th.—Chiffchaff in song.

9th.—Tree-Pipit.

10th.—Very wet lately; ground soaked and meadows flooded.

13th.—A Swallow reported in the 'Oxford Times' as seen by Mr. H. Webb at Oxford on the 8th.

17th.—Willow-Wren and Redstart. Chiffchaff in song for the second time only this spring. The weather turned warm to-day. I have not known the grass-fields so soaked with water for some years at any season.

20th.—Swallows appeared in the village, and a pair went at once into my barn-loft, where they always breed. Blackbird singing while perched on a thatch-coped wall.

21st.—Nightingale and Whitethroats.

22nd.—Cuckoo noisy.

23rd.—Lesser Whitethroat common; Sedge-Warbler, Ray's Wagtail, Whinchat. A White Wagtail on a ploughed field close to the village. A Nightingale in the paddock-walk again this year.

27th.—Mr. A. H. Macpherson and I saw a fine example of the large race of the Wheatear near the weir-lock, Adderbury; it appeared to be half as large again as a Chaffinch, and had a very rich buff breast.

28th.—No fewer than three Nightingales in Milcomb gorse, and four reported from the spinney and fox-cover at Tadmarton Camp, near there. The steady increase of this bird during the last few years is most gratifying; but it is as impossible to account for the increase as it is for the Nightingale practically ceasing to visit the immediate neighbourhood for many years. House-Martin; Grasshopper-Warbler. Not a Stonechat to be seen in Milcomb gorse or on Tadmarton Heath, in both of which places it was a few years ago always to be seen in spring; in the latter locality it used to be quite common, and a characteristic feature. No reason for the disappearance can be given, unless it is that the particular race of Stonechats which used to pass the summer there has been exterminated by severe seasons. The Stonechat was always a partial migrant in North Oxon, appearing in February or March, stray birds being seen very occasionally away from their summer haunts in winter, and more frequently at the time of their return in spring. We watched a Goldfinch shelling out the seeds of Scotch fir-cones.

30th.—Turtle-Dove.

May 2nd.—Could hear two Nightingales as I stood at one of the windows to-night, a thing I never did before, although a quarter of a century ago they were always to be heard about the village.

3rd.—We have four round the village, perhaps five, besides those at Milcomb gorse.

4th.—Garden Warbler.

6th.—Saw a Swallow sitting on the top twig of a fairly high hedge. Mr. Blea told me about the numbers of Golden Plovers which used to visit the high-lying arable land on this side of Chipping Norton thirty or forty years ago.

June 4th.—Arrived home after four weeks' absence. Song-Thrush singing while sitting on the ridge of the house-roof. Red-backed Shrike near Springfields, Banbury, close to one of the three favourite localities of this bird about here.

5th.—Song-Thrush again singing from the roof-ridge, and my man says that it has done so for three days, sitting there for hours from late in the afternoon.

6th.—Examined a Red-backed Shrike shot near Banbury.

8th.—Some young Rooks still in the nest.

10th.—Shot some branchers out of two or perhaps three nests.

15th.—Found at Kingham a half-finished Marsh-Warbler's nest. I saw it again on the 22nd, when it contained four eggs. This nest was hung to two stems of the meadow-sweet, and was close to an osier-bush. The "handles" by which the nest was hung to the stems were very remarkable; the attachment of one of them to the stem was nearly two inches above the lower, or normal, portion of the rim of the nest; of the other (most of which was passed round the stem), over one inch. The nest was formed of round stems of grass, with two bits of cotton-thread (one of several strands) about the rim; it was lined with finer grass and some hair. No moss in this nest.

17th.—Some Gulls seen in the Cherwell meadows near the weir-lock, Adderbury. They are very unusual visitors at this season.

22nd.—Young Rooks "squawking" from a nest in the Middle-ground rookery, and still there on the 24th.

24th.—There is a small oak spinney in this parish which I have known well all my life. I always wondered that the Wood-Wren did not visit it, and many a time I have looked for the bird in vain. To-day I was passing the spinney at some little distance when the well-known song caught my ear. I watched the bird for an hour or two, and I believe searched every foot of ground

anywhere near the trees he frequented. But I could not find the female or the nest, and I am inclined to think that the male had strayed here alone. I may say here that I searched for it in 1902 in vain, and that I do not know any locality frequented regularly by the Wood-Wren nearer here than Tew, about four or five miles away, although I have observed it at Tadmarton Heath spinney, not quite so far off.

80th.—Thrush sang on the roof again.

July 1st.—Goldfinches have young about the garden.

5th.—Bullfinches bite off the tops, and bite open, the seed-pods of the columbines, and eat the unripe seeds.

9th.—A pair of Shrikes very noisy in a tall hedge close to Milton Close, one of the favourite haunts of this curiously local species. They had young out of the nest the next day.

12th.—On two of the recent hot nights, once about 10 p.m. and again about 11 p.m., a Hedge-Sparrow close to the house has burst into a single strain of song. A pair have a nest with eggs in a box-bush just there. In Uruguay I have known the Chingolo Song-Sparrow (*Zonotrichia pileata*) do much the same thing.

16th.—The collection of bird-skins formed by the late Rev. A. Matthews, formerly of Weston-on-the-Green, was sold at Mr. Stevens' rooms. I did not attend the sale, but the skins were examined for use previously, and I afterwards handled a large number of them and bought a few back into the county. With the exception of a little series of the smaller Passeres (all obtained at Weston in 1833 and 1834, and so labelled), the skins were labelled with old parchment tickets. These (with few exceptions) bore only numbers (doubtless referring to a catalogue). The exceptions were a few with "Weston" or "Oxford" added. "Oxford" evidently merely had reference to the place whence the example was forwarded, possibly by some wild-fowl shooter, and not to the actual spot where the bird was killed. And I have little doubt that many of the birds were the examples referred to in Messrs. Matthews' articles on the 'Birds of Oxfordshire and its Neighbourhood,' which were published in this Journal in 1849 and 1850.

The following specimens may be here noticed:—

Night-Heron, "Oxford," adult. Doubtless the one killed at

Standlake in the spring of 1885. This is now in my possession, and I have had it set up.

Gadwall, male and female, "Oxford." These were doubtless shot at Standlake, the male in January, 1883, and the female in the following winter. Male now in my possession.

Garganey, adult, male.

Bittern, "Oxford."

Hen-Harrier, female, "Weston"; now in my possession.

Red-necked Grebe, adult, in winter dress; now in my possession.

Common Sandpiper, "Weston," ♀ 3 June 1884." An interesting date for its occurrence in Oxon.

Hobby, "Weston" (tail worn; had been in confinement).

Dotterel, adult; now in my possession.

Fulmar, "Weston."

Manx-Shearwater, "Weston."

17th.—A pair of Red-backed Shrikes in the old place by the railway on the Lessor Farm, Milcomb. All three favourite haunts are occupied this year, but I have not seen any birds elsewhere.

18th.—My man tells me that a pair of Robins hatched a brood in his garden, and as soon as the young were out of the nest they laid again in the same nest. This brood is now hatched and being fed, he thinks, almost entirely on red currants!

19th.—Warblers swarming in the kitchen garden; Blackcaps, Garden-Warbler, Lesser Whitethroats, and Whitethroats, all feeding on red currants and raspberries. The Robins are as bad as the rest. Very hot, dry weather.

28th.—Rain has fallen. The Warblers spend a good deal of time in the pea-rows and broad-bean stalks, which are badly "blighted" with a lead-grey or black aphis.

August 1st.—Garden-Warbler sang several times; unusual at this date. A Green Sandpiper flew low over my head, calling, near Crouch Hill, where there are several small cattle ponds.

6th.—Goldfinch singing, and Starling a little.

10th.—Saw a Green Sandpiper near Nell Bridge, Adderbury.

11th.—Swifts screaming loudly at evening.

16th.—A few Swifts only.

19th.—Peewits in flock in swede fields.

23rd.—Many Ray's Wagtails in Port Meadow, Oxford.

29th.—Linnets in flocks of a score or more.

30th.—Saw a female Sparrow-Hawk, now a scarce bird just here.

September 1st.—Larvae of the Death's-head Moth are common this year.

The Landrail, which has of late years become very rare here in the breeding season, and has indeed almost, if not quite, ceased to breed just round here (I did not hear one this summer), passes us on migration in the early autumn (probably from the west), sometimes in considerable numbers. This year, in consequence of there being some standing barley and oats (not too much to "walk") in the early part of the shooting season, we had an opportunity of finding a good many, and I have the following notes of them :—

3rd.—Two shot and another seen. 4th.—Five flushed in a big piece of tall strong oats ; as we had no dog *working*, it is highly improbable that we flushed all the birds there were in it, for even Red-legged Partridges lay well ! Two more put up from seeds and barley. I was told of seven shot on the 2nd at Hook Norton, six of them out of one piece of barley. 6th.—One reported shot out of barley. 10th.—Six flushed (five of them from six acres of barley on a hill). Several have been sent to the stuffers by this date. 19th.—One reported seen. 24th.—Two shot. Two of those killed on the 4th weighed $6\frac{1}{4}$ oz. and $7\frac{1}{4}$ oz. respectively. Two on the 10th, 8 oz. and $8\frac{1}{2}$ oz. All were, I think, young birds. Iris clay-brown with a strong tinge of olive-green. Bill, pinkish-horn ; culmen, darker and browner ; legs and feet, light horn. Of the two shot on the 24th one was a small bird weighing only 5 oz., although in good condition. The other, I think, was an adult, and weighed 8 oz. 5 drams. This bird was found in a field of long wheat-stubble, and I saw it running before me down the drills ; it was not going very fast and in a crouching attitude. I had to run in order to flush it. I mention this because I never before *saw* a live Landrail *on the ground* at this season. The stomachs of at least one of those shot on the 10th contained six or eight grains of barley, and the apparent remains of more, with mashed-up insects. Neither of the birds shot on the 24th contained any corn, but their stomachs were full of the remains of insects, chiefly beetles, and a good many little stones, some nearly a quarter of an inch across.

3rd.—Some Meadow-Pipits; early.

5th.—Linnets in flocks of a hundred or more.

10th.—Flocks of from one to two hundred Linnets.

13th.—Heard two Chiffchaffs.

22nd.—News from Mr. G. W. Bradshaw that he saw yesterday a fine adult male Hobby, in the flesh, shot on Goring Heath. Weighed 5½ oz.

October 1st.—Saw many Goldfinches in different places during a day's shooting, chiefly on Milcomb Hills. This bird, except just after a long severe winter, is by no means uncommon in this part of Oxfordshire.

3rd.—Blackbird singing in a low tone.

4th.—Again.

8th.—Again.

12th.—Flock of about a hundred Greenfinches entirely by themselves.

17th.—A Royston Crow shot about this time near Banbury. Mr. Bartlett told me that about fifteen years ago he had a dozen to preserve in one winter; but it is quite uncommon in this county.

24th.—Pied Wagtail singing.

November.—Swallows departed very early this year. I took no notes on the subject, until I remarked that the birds were all gone. But I do not recollect seeing even one in October. Nevertheless, two were reported as seen at Sibford on the 24th November ('Banbury Advertiser').

2nd.—Fieldfares flew over garden.

3rd.—Starling eating pyracanthus berries.

4th.—Many Redwings and one Brambling. Goldfinches in small charms, several times and places in course of a day's shooting.

6th.—A Golden Plover shot in a ploughed field at South Newington Hill.

13th.—Snow fell in the night.

16th.—Half a score of Siskins in some alders.

17th.—A most destructive frost last night. Thermometer down to 14 deg., and stood at 22 deg. at 10 a.m. to-day.

19th.—When we were shooting in a gale of wind from W.S.W., a male Peregrine-Falcon tried to carry off a Red-legged Partridge,

which, having been shot as it came down wind, fell a long way from the guns. The Partridge being a big one seemed to be too heavy for the Tiercel, which could not rise with it (although it could just carry it along), and had to let it go.

21st.—Obtained a most beautiful example of Leach's Petrel in the flesh, which was picked up dead between Bodicote and Adderbury on the 19th. When uninjured the plumage of this bird looks as if it had a soft grey "bloom" on it. I was also shown a Spotted Crake, shot near Banbury on the 9th inst.

24th.—News of a strange bird caught by the clap-netting boys in a tall hedge on the night of the 22nd. I got possession of it this evening, and found it was a Great Grey Shrike, intermediate between *Lanius excubitor* and *L. major*, the white on the secondaries only to be seen on raising the coverts. Unfortunately, forty-eight hours of confinement with improper food had been too much for it, and it died in the night. It was a male.

29th.—Saw a young Barn-Owl, still retaining some down, and the tail only half grown, which was sent to be stuffed a few days ago.

The coldest November within most people's recollection. Twenty-three degrees of frost was registered on the banks of the Cherwell on the 16th, and frost occurred on more than half the nights of the month, while the day temperature very rarely reached 50 deg. Less than an inch of rain fell, but the weather was unusually foggy.

December 1st.—A few Fieldfares and Redwings only; there are no "haws" this year. A Blackbird a day or two ago ate five berries of *Cotoneaster simondsi*. A Robin eats some of the fowls' corn daily.

3rd.—An increase in the number of Fieldfares and Redwings, of which there are a fair number now. Goldfinches about the fields.

6th.—On Clattercote Reservoir there were about thirty Mallard and about fifty Teal; five Tufted Ducks, three or four Pochards, and a fine adult male Golden-Eye.

10th.—News from Mr. G. W. Bradshaw of a Little Owl shot at Wyfold Court on the 7th November.

12th.—Furious snow-storm from north. The train service on our branch line broken down.

17th.—Flock of about a score of Golden Plovers between South Newington and Barford. Blew and snowed at night.

18th.—Frost and snow-storm.

20th.—Goldfinches in the fields.

23rd.—Frost continues. A female Peregrine-Falcon, the finest I ever saw, was shot at Barford, near here. It measured 18½ inches in the flesh. Head, face, and nape very dark; mantle pale and blue; throat, fore neck, and breast quite unmarked until the extreme lowest breast is reached. On the lowest part of the breast and the belly, the markings are indistinct and broken. Flanks and thighs with very narrow dark bars. Throat, pale parts of the face, the neck, breast, and belly deeply flushed with reddish buff or dull salmon colour. I never before saw this colour so dark or so rich in this species. Legs and feet lemon-yellow, cere the same (a week after death, and probably faded).

27th.—Charm of six Goldfinches and others. Some Bramblings.

28th.—Thaw.

There has been no Song-Thrush song this month or last (and there was but little autumn song); a great contrast to last year. We have, indeed, few Thrushes remaining with us this winter.

NOTES AND QUERIES.

MAMMALIA.

The Lesser Shrew and Bank-Vole in Suffolk.—As the distribution of the smaller mammals in Suffolk appears to be imperfectly known, the following facts may be of interest:—In 1893–94 I found the Bank-Vole (*Arvicola glareolus*) not uncommon in the plantations and woods of Huntingfield (North-east Suffolk). On April 25th, 1901, while on a short visit to the same place, I took about twenty-one pellets of the White Owl (*Strix flammea*). These were afterwards analysed by Mr. Lionel Adams, and amongst the skulls identified were twelve of the Bank-Vole and two of the Lesser Shrew (*Sorex minutus*). The latter species has, I believe, been only taken previously at Blaxhall, in East Suffolk. A small series of twelve pellets from an old willow at Great Thurlow (West Suffolk) also contained a single skull of the Lesser Shrew. Probably further research will prove that it occurs in small numbers throughout the county.—FRANCIS C. R. JOURDAIN (Clifton Vicarage, Ashburne, Derbyshire).

AVES.

Nesting Sites of Blackbird and Song-Thrush.—The note by Mr. R. H. Read in the current ‘Zoologist’ (*ante*, p. 28) is of considerable interest to me, and I have been looking up my notes of abnormal nesting-sites. There is a particular locality in one of my nurseries where for a long series of years past I find almost annually one or more nests of Blackbirds and Song-Thrushes placed right upon the ground. These have all been found within a piece of land not more than one hundred and twenty yards in diameter, and nowhere else within an area which is some twenty acres in extent. The same birds, or their descendants, have stuck to this ground-nesting, otherwise it is difficult to account for. In April, 1889, I found a couple of Blackbirds’ nests at a distance of about one hundred yards apart. One was built on the level ground at the bottom of a dry stone dyke where a stone had been taken out, and within the little archway thus formed. The other nest was placed midway on the grass slope, of about 18 in. high,

that runs along the base of a thorn-hedge. It was in just such a spot as a Robin would have chosen—a little hole in the bank. Somewhat similarly placed Blackbirds' nests have frequently been found since. Then, in the following spring, I found a Song-Thrush's nest on the bare open ground in precisely such a situation as a Sky-Lark would have selected—under the shelter of a tuft of grass. In 1898, within a few yards of this spot, a Song-Thrush's nest was found, built on the ground betwixt rows of young beech-trees that averaged four to five inches high. In subsequent years, as already stated, such ground nests of both Blackbirds and Song-Thrushes have been pretty regularly found. Plenty of hedges and bushes are all around, so that this preference for a lowly site cannot be explained because of any lack of suitable convenience of the usual order. At one time I thought these particular Song-Thrushes might turn out to be of the Hebridean form, which very often, if not always, nests amidst the herbage on rocky ledges; but a close examination did not disclose either the dark colouration or the hooked beak-tips of that peculiar Thrush of our western islands. Of course we know that some of the North American Thrushes build as regularly on the ground as our Thrushes do in trees, bushes, and hedges in normal circumstances. Then there is our own Ring-Ouzel, which is as often a ground-builder as a ledge-builder.—ROBERT SERVICE (Maxwelltown, Dumfries).

Blackbird laying on the Ground.—Mr. Read's note on this subject reminds me of a similar incident that came under my own observation in Fifeshire on May 16th, 1891. At the junction of two walls a large quantity of leaves lay blown together, and in the corner, on the leaves, and without any further attempt at a nest, a Blackbird was sitting on three eggs. On the day mentioned I put the Blackbird off the eggs, and I took for granted that she had laid there through necessity, her own nest mayhap having been harried when the first egg was laid.—ROBERT GODFREY (46, Cumberland Street, Edinburgh).

The Status of the Goldfinch (*Carduelis elegans*) in Britain.*—*North Wales* appears to be a stronghold of the Goldfinch. In Montgomery from Welshpool to the west it is comparatively common, and breeds freely about Welshpool, whilst farther up the Severn Valley to the source it is more local and scarcer.

Yorkshire (West Riding).—In the West Riding I know of no authentic breeding of the Goldfinch; formerly it used to breed sparingly (within

* We have received the following notes on this subject since our last issue.—ED.

the memory of living men). About two years ago I saw a flock of about fifteen to twenty birds feeding on some alders fringing the River Aire, near Bingley. This is the only time I have met with this species in the West Riding, though I have many times looked anxiously for it.—ROSSE BUTTERFIELD (Wilsden, Bradford).

Isle of Man.—It had become very infrequent, but with the last decade there have been signs of increase. Flocks have been noticed, especially in the north of the island.—P. S. RALFE (Castletown, Isle of Man).

East Sussex.—During the breeding season I have noticed no diminution; large numbers of immigrants appear in autumn and throughout winter. I do not think it can be said there has been any diminution during the period 1894–1902.—W. RUSKIN BUTTERFIELD (St. Leonards-on-Sea).

Notts.—No doubt that its numbers have seriously declined within memory of the present generation. An old man, whose young days were passed in poaching and birdcatching, has several times told me that he has on occasions caught fifty “Proud-Tailors” before breakfast. Now it would take a number of years to *see* the same total.—CHAS. E. PEARSON (Hillcrest, Lowdham, Notts).

Hampshire.—When collecting information twelve years ago from all parts of this county for a list of Hampshire birds, I found a general consensus of opinion that it was increasing, thanks to the Bird Protection Act. Since then have lived in two parishes on south side of New Forest, and found it fairly common and nesting. Mr. Meade Waldo, writing in 1900 (*‘Victoria History Hants’*), says, “decidedly increased in numbers during the last ten years.”—J. E. KELSALL (Milton, Lymington).

North Wales.—Roughly speaking, the Goldfinch is most numerous in the south-east of Montgomeryshire and parts of Merioneth; whilst it occurs in many scattered lowland districts throughout the other counties in fair numbers. It has not been noticed as increasing except in the first-named county.

Anglesey.—Mr. S. G. Cummings says it is fairly common in East Anglesey in suitable places, and Mr. R. J. Edwards states that at Holyhead it is rather plentiful, notwithstanding birdcatchers. Others speak of it as rather scarce. I am told it does occur on the south-west coast, but never met with it there—district not suitable. Occurs at lighthouses in November.

Carnarvonshire.—Owing to the mountainous character of the county the Goldfinch is scarce, except on the lowlands, which are chiefly

confined to the seaboard, and even there it is by no means numerous as a rule. The only district where it is plentiful is in the Conway Valley up to Bettws-y-Coed.

Merioneth.—Much of this county also is too mountainous for the Goldfinch, but it occurs in small numbers along the western seaboard, and is fairly common in some of the valleys, as at Llanbedr, Corris, and round Bala. It is particularly numerous in the Dovey Valley from the estuary up to Dinas Mawddwy, and all round Machynlleth, where I saw nests in 1901.

Flintshire and Denbighshire.—Occurs in many parts of these counties—in fact, seems to be generally distributed—but is not numerous, except in the Vale of Clwyd, where it may be described as rather common.

Montgomeryshire.—Generally distributed throughout the county, but is less numerous in the western parts than the eastern. It is particularly plentiful around Welshpool, Llanfair, and Montgomery, and large numbers are caught in the autumn to be sold as cage-birds. In this district the bird seems to be on the increase, and there is little doubt that the Protection Act has done good, since it makes it impossible to expose the birds for sale in the close season.—H. E. FORREST (Brayston Hill, Shrewsbury).

A Habit of the Lesser Redpoll (*Linota rufescens*).—Mr. Blathwayt relates his experience (*ante*, p. 26) of the nesting habits of the Lesser Redpoll in Lincolnshire, and asks for information from naturalists in other parts of Britain, confirmatory or otherwise, as to its susceptibility to forsake its nest on the occasion of its being disturbed. It is far from being an uncommon nesting species in this district, consequently I have had considerable experience of its nesting habits, but have never known it forsake its nest, however much it has been disturbed. Only last season a friend of mine interested in bird-nest photography expressed a wish that I should find him the nest of the species, which I did, built on a horizontal branch of a Scotch-fir about nine feet from the ground. It was building when it was found, and, although much disturbed, almost daily, it still continued its operations. When it had begun to sit my friend photographed the nest and eggs, but previously to doing so it was necessary to lop the twigs in the vicinage of the nest, thus altering altogether the character of its surroundings; yet notwithstanding this treatment it persistently sat on, and ultimately brought off its young.—E. P. BUTTERFIELD (Wilsden, Yorkshire).

Wood-Lark in West Suffolk.—On Jan. 14th I saw two Wood-Larks (*Alauda arborea*) in the flesh at Mr. Travis's shop in Bury, which had

been shot at Rougham. This is a bird little known in Suffolk, though it breeds in the county ; and these are the only ones I ever saw in the flesh. They were probably migrants from the north which the hard weather had brought down, and in no way connected with those which come into Suffolk later in the year for the purpose of nesting.—**JULIAN G. TUCK** (Tostock Rectory, Bury St. Edmunds).

Hybrids between Domestic Pigeon, ♂, × *Columba cænas*, ♀.—In 'The Zoologist' for June, 1900 (p. 281), when recording a hybrid betwixt a Homer Pigeon and a Collared Turtle, I described how a friend had failed to rear some hybrids obtained betwixt various of his Domestic Pigeons, and Stock-Doves he had hatched and reared from eggs obtained from nests in the sea-cliffs near his house. Invariably the young ones died within a few days after hatching out. In 1901 the same gentleman (Mr. James Blacklock, Southwick) obtained a young Stock-Dove, in the squeaker stage, that had been caught by the keepers on the estate when ferreting rabbits. It had bolted into the net, rabbit fashion. This bird was placed amongst the Pigeons, and soon became quite at home. Late in the summer of 1902 it paired with a Blue Tumbler cock, and they successfully brought up a strong and healthy couple of young, which I had an opportunity of examining on 18th November last. They had then parted with nearly all evidences of adolescence. In appearance they bear much more resemblance to their maternal parent than they do to their father. All four were flying with the other Pigeons in the courtyard, and no person could have imagined for a moment that the Stock-Dove had ever been a wild bird. Perhaps the term "wild bird" may not truly apply, because it doubtless looked out upon the world for the first time when it bolted into the rabbit-net.—**ROBERT SERVICE** (Maxwelltown, Dumfries).

Protective Colouration of Birds' Eggs.—Looking over old diaries I came across the following instance, which may be of interest to readers of 'The Zoologist':—On May 4th, 1898, I rescued five fresh (i.e. unincubated) Great Crested Grebe's eggs, which however, I am glad to say, were not taken in this neighbourhood, from being blown. On the following day I took them over to Hickling Broad, and put two, two, and one into the nests of three Coots, which had not yet laid their own full complement of eggs, removing three, three, and one Coots' eggs in doing so. Within two days Rooks—or Crows—had sucked every one of the Grebe's eggs, whilst numerous nests full of Coots' eggs were left unharmed near by. The slight difference in the ground colour and the absence of the small black markings were appa-

rently sufficient to attract the leery eyes of the prowling *Corvidæ*. Hence the necessity for, or one reason of, the "Loon" covering her eggs so deftly whenever she leaves them, an action which is so rapidly performed that my binocular-aided eyes have sometimes been hardly sharp enough to follow, and that at close quarters. There was a correspondence in 'The Zoologist' (1898-1899) about the Moorhen covering its eggs on leaving the nest. This habit is not indulged in hereabouts, at any rate according to my own observations, which have been long and frequent; nor have any of the local "egging" marshmen whom I have consulted on the subject ever noticed it, although one of them was sufficiently observant to mention to me the similarity of the surface markings on Coots' eggs to the black fungoid discolourations on dead reed-leaves long before I saw any allusion to this interesting fact in print. When at Cambridge (1876-1879) I found several Moorhens' nests on and around the much-frequented back river, but never even there observed any other attempt at concealment beyond the partial bending down of tall vegetation over and above the entire nest. This habit is also indulged in, to a less degree, by the Redshank. The Wild Duck and Pheasant often build in very similar situations, and their egg-shells vary but little in shade; yet the land-bird leaves hers open, whilst the water-fowl compensates for the slightly less pigment in hers by covering them up.—MAURICE C. H. BIRD (Brunstead Rectory, Stalham).

A M P H I B I A.

Larvæ attacking Toad (*Bufo vulgaris*).—One day last summer I found a Toad which presented a rather curious appearance, having both nostrils considerably enlarged. I took it home and placed it in a case for more careful examination later on. This I was prevented from doing for several days, and when I next looked, it was lying dead on the bottom of the case, and with one of the eyes and the greater part of one side of the head entirely eaten away by a number of pale yellow larvæ about one-third of an inch in length, which from their appearance I judged to be the larvæ of a dipterous insect; but whether the larvæ had attacked the Toad after being hatched from the egg, or whether the eggs had been hatched inside the nostrils of the Toad, I was unable to decide. I should be glad to know from some of your readers (1) if this occurrence is common; (2) what species of Diptera or other insect it is which makes the attack. The Toad in other respects seemed in good condition.—B. J. HORTON (805, Stratford Road, Sparkbrook, Birmingham).

[The larvæ above referred to as attacking a Toad were doubtless those of *Lucilia sylvarum*, Mg. (family *Muscidae*), one of the common greenbottle flies. Such cases are not uncommon, and entomological literature contains a number of records of the destruction of Toads by the maggots of this fly. It would appear that the eggs are deposited on the Toad's back, and that the larvæ on hatching make their way into the creature's eyes or nostrils. Toads are sometimes attacked in a similar manner by the larvæ of blowflies (*Calliphora*), cf. L. G. Guthrie, "On a Toad killed by the Larvæ of Blow-Flies," 'Entomologist's Monthly Magazine,' 1892, pp. 9-12. — E. E. AUSTEN (Brit. Mus., South Kensington).]

NOTICES OF NEW BOOKS.

The Tanganyika Problem; an Account of the Researches undertaken concerning the Existence of Marine Animals in Central Africa. By J. E. S. MOORE, F.R.G.S. Hurst & Blackett.

IT is well within the memory of many, when Burton first discovered Lake Tanganyika. Africa was then a dark continent, to be only traversed by the adventurous leader of a big expedition ; to-day it is an ordinary goal for a sportsman, and will soon be tramped by the Cook's tourist. The discovery of the lake was the event of a geographical season ; we are now studying the origin of its fauna, which is the "Tanganyika problem" which this volume has brought into the domain of real zoological philosophy. The interest in the question has long been accumulating from the time when Speke brought home a few shells he had picked up on its shores, and which were recognized as curiously marine. Then Jelly-fishes were discovered in the lake by Dr. Böhm, and a British expedition—purely biological—was despatched in 1896 under the direction of the author of this work. The most definite result of that expedition appeared to be that "the sea had at some former time been connected with the lake, but when or how remained a mystery." Prof. Ray Lankester, who had organized the first expedition, now initiated a second one, and Mr. Moore again started in 1899 for the lake, whose marine molluscs compare, every one, with individual prototypes in the remains of the old Jurassic Seas.

The problem was complicated by one of those speculative assumptions which so often crystallize as dogmas in scientific generalizations. Sir Roderick Murchison, from an examination of then available geological and other facts, had concluded that the interior of Africa had never been beneath the sea, and considered his view was confirmed by the absence south of the equator "of all those volcanic activities which we are accustomed to associate with oscillations of *terra firma*." Consequently, to

prove his thesis, Mr. Moore had to disprove this theory before offering his own explanation of the facts. His investigation of the geological characters of Central Africa goes to prove that there is no foundation for the Murchison hypothesis, and that there is evidence of vast disturbance in the region of the great lakes. Mr. Moore's conclusion is that Tanganyika was originally stocked with halolimnic animals * from a western sea, of which the great lake itself, and the vast back waters of the Congo, may be said to be the last remains. Owing to geological changes these became a more and more land-locked sea, "and in the course of time the water in these areas became freshened, and consequently a large section of the old marine fauna died out, while those fishes which could withstand the change migrated to a certain extent throughout the fresh waters of the continent." The reader is not simply asked to accept this proposition, but is afforded a long zoological argument, based on well-marshalled facts, which makes a contrary opinion almost impossible.

We wish space would allow mention of many incidental facts and observations recorded in this volume : such as the opinion as to the origin of park-lands, which the writer of this notice has often seen and pondered in the Transvaal ; that floral changes in these areas are due to physical conditions, and not to the struggle for existence among different species ; and that in many of the great lakes "there is hardly so much variety of life as there is in an ordinary American or European puddle." The recently discovered fishes of Lake Tanganyika, which consist of eighty-seven species, of which seventy-four have been described as new, are enumerated with Mr. Boulenger's original descriptions, accompanied by a reproduction of Mr. Green's excellent drawings of the same. The Molluscs, Gastropods, Crustacea, Medusæ, Sponges, Protozoa, and new Polyzoan receive ample treatment ; while the whole work is so lavishly illustrated as to render it a notable addition to our knowledge of African zoology.

* "Organisms possessing definitely marine and somewhat archaic characters."

EDITORIAL GLEANINGS.

"A Contribution to our Knowledge of the Mole (*Talpa europaea*)" is the title of a paper contributed by Mr. Lionel E. Adams to the 'Memoirs and Proceedings of the Manchester Literary and Philosophical Society' (1908). This memoir is a somewhat exhaustive one. It refers to the whole literature on the subject, from Le Court (1798), Saint-Hilaire (1829), Blasius (1857), to modern writers. A number of illustrations are given to show the different structures of Mole-fortresses, and the writer concludes that "these galleries are the natural, incidental, and inevitable outcome of the work of excavating the nest-cavity, and piling up the superincumbent mound." There is a seemingly enormous proportion of males to females in this animal, but Saint-Hilaire discovered by dissection that the virgin Mole has the same external appearance as the male, and Mr. Adams has given a full translation of the main points in Saint-Hilaire's demonstration. Amongst the enemies of the Mole, the author mentions a fox-terrier of his, who successfully hunted these animals. The writer of this notice also once possessed a fox-terrier whom he scarcely ever took out for a ramble over and in the Surrey hills and valleys without one or more Moles being found, killed, and triumphantly produced by his canine companion, and this without the slightest incitement.

'The Asian Sporting Newspaper' for Dec. 18th, 1902, has given a full biographical estimation of Dr. P. L. Sclater, who, as generally known, has vacated the post he has so long and ably held as Secretary of the Zoological Society of London. One paragraph may at least find place here :—

"When Mr. Sclater took over the reins of the Society in 1859 the number of Fellows on its roll was 1716, the income for the previous year £14,084, and the number of admissions to the gardens 888,980. For the last year of the century the number of Fellows was 3250, the income £28,772, and the number of admissions 697,178. A greater and more satisfactory progress during forty years could scarcely be expected, or even desired. And all this is mainly, if not entirely, due to the untiring and ceaseless energy of the Secretary."

At the meeting of the Zoological Society, held on Jan. 20th last, Mr. F. E. Beddard read a communication dealing with the surface anatomy of the cerebral convolutions in *Nasalis*, *Colobus*, and *Cynopithecus*. The wide differences which the brain of *Cynopithecus* shows from that of the Baboons and its many points of resemblance to the brain of *Semnopithecus* were pointed out. *Colobus* was shown to closely resemble *Macacus* in the structure of its brain. Three brains of *Nasalis* were reported on, two of which the author owed to the kindness of Dr. Charles Hose, of Borneo. It was stated to be practically impossible to distinguish the brain of this genus from that of *Semnopithecus*.

MR. J. A. ALLEN contributes a most interesting article to the last issue of 'The Auk' on the subject of the A. O. U. Check-list; its history and its future. It appears that the new and ever-increasing workers at ornithology expend a large amount of energy on bibliographical studies and consequent changes in nomenclature. This will probably increase in future, and applies to Europe as much as to America, and is not confined to ornithology. "The danger of excessive splitting is greater now than ever before, since we have reached a point where comparatively few strongly marked local forms remain to be discovered and named, while the number of enthusiastic young workers is steadily increasing. Plainly, not every degree of differentiation that can be recognized by the trained expert needs recognition by name, and not every slightly differentiated form that can be distinguished readily on comparison of a large series of specimens should be considered as entitled to a place in a list of North American birds."

The following interesting communication is to be found in 'The Condor' in its last issue, commencing vol. v. :—

"*Do Wild Birds die instantly?*"—Mr. Wm. Earl Dodge Scott, in an article on birds in 'The Outlook' of July 5th, 1902, has made a statement that is somewhat remarkable in that it shows how differently Nature reveals herself to different observers, and especially remarkable because so emphatically backed up by his reference to hunters and others whose occupations teach them to observe. He states that not only do birds die instantly—which term must be here used in a comparative sense, and is a little strong—when injured or afflicted with illness, but also that in all his experience he has never come across a sick bird or animal in a wild state, nor met with anyone else who has done so. My attention was attracted by this statement, because,

although Mr. Scott probably has had much greater opportunities for observation than I, my experience has been very different from his. This may perhaps be accounted for by the mildness of climate, or a lower proportion of bird enemies in the Pacific Coast collecting grounds; but it is a fact that occasionally sick or suffering birds and animals are to be found in California. For example, I have found dead sea-birds along the shore, with no signs of their having been injured, in a greatly emaciated condition, showing that they had suffered for some time before death. I have shot land-birds that were woefully thin and weak, and have even taken one or two that were so afflicted with some cutaneous disease that it seemed advisable not to handle them. The Californian Jack-rabbit suffers to a great extent from lumps caused by a parasite, and these are sometimes so large, and weaken the animal to such a degree, that it can hardly get out of one's way. Besides eye-witnesses who can verify some of these observations of my own, there must be others who have had similar experiences, and consequently Mr. Scott's statement cannot be accepted as an absolute rule.—*JOSEPH MAILLIARD.*"—A writer under the initials W. K. F. adds:—"My own experience agrees perfectly with that of Mr. Mailliard. During December, 1900, while at Monterey Bay, I saw a Heermann Gull and many emaciated Brandt Cormorants which were dying a slow death, and only yesterday (Dec. 22nd, 1902) saw another during a short walk near the Point Pinos Light. On Laysan Island, Hawaiian group, I saw a number of sickly birds among the seafowl, and found a very rare Petrel in this condition. Mr. Scott's rule does not obtain among mammals, for, besides the example offered by Mr. Mailliard, I found a large Sea-Lion near Cypress Point, which existed for days in a perfectly helpless and moribund condition, until Prof. Harold Heath and myself mercifully killed it. Dissection showed no internal injuries nor parasites, while the teeth rather pointed to old age."

We are glad to see from the last published Report of the Australian Museum at Sydney that the preparation of the new edition of Mr. A. J. North's work has been continued. It is practically new, although to some extent based on the former catalogue, and it has been decided to call it "Special Catalogue, No. 1, Nests and Eggs of Birds found breeding in Australia and Tasmania." The first part was issued in June.

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THE BLACK EMEU.

By GRAHAM RENSHAW, M.B.

THE group of flightless birds scientifically known as *Ratitæ* will always be of peculiar interest to the naturalist on account of their anomalous condition, which contrasts so strangely with the free-flying powers which the majority of the feathered tribe possess. Indeed, to the popular mind, a bird which cannot fly is almost as great a marvel as a mammal which lays eggs, a predaceous bird which can sing, or a fish which dies if kept submerged in water. The practical naturalist can call to mind familiar instances of all these prodigies in the form of the Australian Ornithorhynchus, the Bechuana Chanting Hawk, and that quaint fish, the West African Mud-Skipper (*Periophthalmus*). The *Ratitæ* are also remarkable for the high development of their running and kicking powers, which have kept pace with the gradual diminution of the wings; so that, although all but apterous, these birds are by no means in a defenceless condition. Then again the ease with which the members of this group can be tamed and tended in captivity renders them most suitable subjects for acclimatization, whilst the large size of many species well adapts them for exhibition in zoological gardens.

The African Ostriches have been so much appreciated for their beautiful plumes that in many districts they are little more than gigantic barnyard fowls, being kept on special farms for the

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sake of their feathers, besides being protected in the wild state. The East Indian Cassowaries are frequently reared from chickenhood by the natives instead of being exterminated, and must form a considerable item in the stock of those who cater for European menageries, to judge from the great number I have seen offered for sale during the past few years. Far otherwise, alas! is it with the New Zealand Apteryxes and the Emeus of Australia, which tend rapidly to extinction; from the fine appearance and natural docility of the latter birds this decrease in numbers is greatly to be regretted.

Three species of Emeu have been recognized as valid, and it is to these birds that I propose to devote this essay. The Spotted Emeu (*Dromaeus irroratus*) is a very elegant bird of slender build, and having its dark grey plumage pleasingly dotted with white, as if besprinkled with dew. This species is easily recognized by its hazel iris. A living example was exhibited at the Amsterdam Zoological Gardens in 1860, and in June of that year a second example, received in exchange from the Rotterdam collection, arrived at the London Zoological Gardens. Two young birds which had been captured on the Swan River were subsequently added to the Regent's Park menagerie. Although it has been ascertained to inhabit Western Australia, but little is known about this rare species.

The Common Emeu (*D. novæ-hollandiae*) is known by its stouter build, and by its light brown plumage mottled in places with grey; the iris is reddish brown instead of hazel. This species is so well represented in zoological gardens and museums that most persons will be familiar with its appearance. Special interest attaches to the Common Emeu as being the largest of all living birds save the Ostrich.

It is a remarkable fact, that many animals conspicuous for their size, are related to others whose dwarf forms seem almost like miniature reproductions, fashioned by nature in a fit of whimsical caprice. For instance, although the recent species of Elephant are the largest of all terrestrial mammals, there have been discovered in the caverns of Malta the remains of pigmy Elephants, closely related to the living African species, yet not exceeding three feet in height! Similarly the great *Hippopotamus major* of Britain, now known only by its fossilized bones,

was formerly represented in Cyprus by the little *H. minutus*—the “petit hippopotame fossile” of Cuvier. Again, the Common Hippopotamus of the African rivers has to-day a dwarf congener (no larger than a heifer) occurring in Liberia. The Common Emeu is no exception to the rule, for this great bird had once a pigmy cousin which occurred on Kangaroo Island, off the south coast of Australia, and was found nowhere else. This dwarf or Black Emeu has unfortunately been utterly exterminated, and is so rare in museums that but one stuffed specimen and two skeletons are certainly known to exist. A hundred times rarer than the lamented Great Auk, this vanished *Dromæus* is well worthy of the detailed attention which we now proceed to devote to it.



Black Emeu (*Dromæus ater*) in the Jardin des Plantes Museum, Paris.
The only stuffed example known.

The Black Emeu (*D. ater*) was about the size of a large Bustard. In addition to its diminutive proportions, it was remarkable for the curious overdevelopment of its plumage, the elongated feathers hanging loosely about it, as if too ample for the body which they covered. An examination which I made of the Paris specimen a few months ago showed that the general colour of the plumage was blackish brown, the individual

feathers being brown for about two-thirds of their length, with a blackish-brown tip. The crown of the head was quite black, as were also the feathers of the neck and throat. The legs of the Black Emeu during life are said to have been of a dirty bluish colour, but I found that in the dry state they did not materially differ from those of a Common Emeu, with which I compared them at the time. According to Latham, *D. ater* had the iris of a brown colour, thus resembling the common species rather than *D. irroratus*.

The history of the Black Emeu is soon told. In 1803 a French scientific expedition under Captain Baudin landed on Kangaroo Island. Baudin himself took a great interest in natural history, and had sent a rich collection of specimens—both zoological and botanical—to the Jardin des Plantes only a few years previously. On this occasion he had the valuable assistance of Péron, the celebrated zoologist, and it is to the work of this expedition that scientific Europe is indebted for almost all its knowledge of the Black Emeu. Kangaroo Island was uninhabited by man, but abounded in the marsupials from which it took its name, and there were also great numbers of *D. ater*—"Casoars," as the Frenchmen called them. By a happy chance it was determined, if possible, to bring away some of the pigmy Emeus alive; had it not been for this haphazard resolution, the species we are now considering would probably never have been known at all to naturalists. Three birds were taken alive, and it speaks well for the intelligent care taken of them during the long voyage home, that they all arrived safely at Paris in 1804-5. One of these Emeus was placed in the menagerie of the Jardin des Plantes, where it continued to thrive for many years; the other two, with a Zebra, a Monkey, and a large collection of plants, were destined for the Empress Josephine. The Empress's Emeus were sent to her residence of La Malmaison, and at their death one of them—indeed, probably both—was placed in the Jardin des Plantes Museum.

It is interesting and indeed satisfactory to note that the Black Emeu, rare as it was, did not become extinct before specimens had been brought alive to London and examined by an English ornithologist. Dr. Latham tells us that a pair which

he saw some time previous to 1822 were remarkable for the looseness of their plumage, which was so long as to conceal the thighs. They carried themselves in true Emeu fashion, with protruding breast and retracted head—a stately mode of progression which may be studied in the Common Emeu by observation at the Zoo. In Latham's day the distinctions between the various ratite birds had not been worked out; he called *D. ater* "Van Diemen's Cassowary," but evidently recognized it as a valid species, pointing out that it was always smaller than *D. nova-hollandiae*, which he styled the "New Holland Cassowary."

Latham says that the two birds he saw were of a tame disposition, and it is highly probable that the Black Emeu was as capable of being semi-domesticated as the common species, which now breeds in many an English gentleman's park. The three examples brought from Kangaroo Island stood the climate of France well enough; one of them lived from 1804 to 1822, and when it died was still in splendid condition, as an examination of its stuffed skin will testify. Indeed, these birds might have been easily acclimatized in Europe, and perhaps the founding of a menagerie-bred race would have ensured the permanent continuance of the species independent of any calamity that might happen to the wild individuals which had been left on their native island. *Dis aliter visum.* The Black Emeu has been utterly exterminated, and, indeed, has disappeared so completely that it should not be ranked with the "commoner" extinct birds, of which a considerable number of museum specimens yet remain—the Great Auk and the Labrador Duck, for instance. It should rather be enrolled in the "almost unique" series of exceedingly rare forms, such as the Black and White *Fregilupus* Starling of Réunion, or Pallas's Cormorant.

Bullock and Latham alone, amongst the early naturalists, appear to have certainly recognized the Pigmy Emeu as distinct from the common species. Mr. Bullock will be chiefly remembered by naturalists as being one of the few ornithologists who ever had the chance of chasing a British Great Auk, and many will remember how he is related, in 1812, to have pursued the male bird, now in the National Collection, for several hours in a six-oared boat without success. It appears that the Bullock museum contained a specimen of the Common Emeu, and also

of the "Lesser Emea, not half the size of the above, and a distinct species." Since Bullock's day no more Black Emus seem to have been sent to Europe, and for many years this interesting dwarf remained practically forgotten. At length ornithologists realized that *D. ater* was a perfectly distinct bird from any of its congeners, but the discovery came too late. In the interval a squatter had taken possession of Kangaroo Island, and this man, whose wanton waste of animal life cannot be too severely condemned, barbarously exterminated both Kangaroos and Emus; so that the little "casuar" of Baudin and Péron disappeared utterly from the face of the earth.

A census of the few relics left to us will complete this obituary notice. I have included all the specimens—a scanty list at best—of which I have been able to find any record whatever. They are as follows:—

1. A stuffed specimen—possibly the only one now in existence—is preserved in the Natural History Museum of the Jardin des Plantes. It was one of the three individuals brought home by Captain Baudin, and, independent of its known history, has evidently had a long *post-mortem* existence as a museum specimen, for it has been provided with the old-fashioned circular glass eyes formerly used with rare impartiality for bird and beast, carnivore and herbivore, by the old taxidermists. On account of the rarity of the Black Emu in museums some naturalists still appear to cling to the idea that it is identical with the common species, just as some authorities once believed that the South African Blaauwbok was only an immature or dwarf Roan Antelope. This specimen, however, was not set up till 1822, and after all it will be granted that eighteen years gives the feeblest menagerie specimen ample time to become adult; besides, if *really* feeble, it would probably not have survived for so long! It is indeed evident that when the bird died it was in excellent plumage, and this mounted specimen to-day shows no signs of disease. We may reasonably conclude that it is an excellent typical specimen of the average size, and in every way a good representative example of *D. ater*. I am inclined to think that this bird was a female. It is satisfactory to note in the looseness of the plumage (see illustration) a confirmation of Latham's account, for he drew attention to the fact that in

"Van Diemen's Cassowary" the thighs were quite concealed, whereas in the common species they were visible enough. To sum up, the Black Emeu is distinguished from *D. novae-hollandiae* by :

- (a) Its smaller size.
- (b) The greater development of the plumage, which hangs down behind almost like a train.
- (c) The colour of the plumage brownish black, the Common Emeu being a much greyer bird.

An excellent custom prevails at the Jardin des Plantes Museum, for officials are stationed about to explain objects to visitors; to one of these gentlemen, indeed, I was much obliged, for it was he who with evident pride pointed out to me the "emeu noir," besides showing me a famous specimen of an extinct Pigeon (*Alectorænas*, I think), and other rarities. There are, indeed, few museums where the attendants take such trouble to befriend visitors, or show such an educated interest in the objects under their care.

2. The skeleton of another of Baudin's specimens was prepared in 1822, and placed in the museum of comparative anatomy connected with the Jardin des Plantes.

3. A third example—probably the remaining Emeu of Baudin's three birds—was prepared as a skeleton previous to 1833, and is now in the Royal Zoological Museum at Florence. It is a male specimen, and probably originally came from the Paris collection.

4. At the sale of the Bullock Museum in 1812, the Linnean Society purchased the "Lesser Emeâ" for £7 10s. Unfortunately all trace of it has been lost.

5, 6. A pair of "Van Diemen's Cassowary," exhibited in London—perhaps in the old menagerie of Exeter 'Change—was seen, as already related, by Latham; and one of the birds is grotesquely figured on plate cxxxviii. of his 'General History of Birds,' published in 1822. Nothing is known of the fate of these birds; perhaps their remains are still unrecognized in some provincial museum.

The above list practically completes all that can be said about the Black Emeu. It seems possible, however, that further specimens might be found by a systematic search in the museums

of Europe, and also in those of Australia, New Zealand, and Tasmania. It must be remembered that the *skins* of two of Captain Baudin's Emeus have not yet been accounted for. This pigmy species seems very likely to be overlooked, being mistaken for a young example of the Common Emeu; but a small yet *fully adult* specimen (as indicated by the state of the beak, legs, and feet) could surely be easily identified as the true *Dromæus ater*, and should this communication cause a search to be instituted, resulting in the discovery of any hitherto unrecognized specimens, it will not have been written in vain.

ORNITHOLOGICAL NOTES FROM CO. DONEGAL.

By W. C. WRIGHT.

UNTIL quite recent years Donegal was, practically speaking, an unknown part of Ireland, but now, thanks to the splendid system of light railways and well-organized coaching tours, one can visit the most remote part with a more or less degree of comfort.

During the latter part of June and beginning of July (1902) I spent several weeks in visiting some of the breeding resorts of the sea-fowl on the coast and adjacent islands. Starting from Donegal town, you reach the terminus Killybegs by rail, whence the one hundred miles coach tour starts, by taking which one can inspect at leisure the whole seaboard right round to Ross-pennan.

Killybegs stands in a land-locked lough, in which are several small islands. On some I visited were found large numbers of Arctic Terns (*Sterna macrura*) nesting; some of the nests were the best attempts at building I have seen, being lined with straw and seaweed. Most of the young were hatched (June 30th), but in several nests I noticed the full clutch of eggs. Ring Plovers were also nesting here; the eggs were to be found at high-water mark on the bare shingle, no materials of any kind being used.

Carrick.—From here I visited Rathlin O'Birne island, a lighthouse station, and the most westerly point of Donegal. Storm-Petrels (*Procellaria pelagica*) were breeding there in large numbers; the eggs I found on the bare ground among large boulders. The female birds were easily captured by the hand, and in every case, when handled, they emitted the peculiar oil, which, to me, diffuses a pleasant odour. The other birds nesting there were Oystercatchers, Herring-Gulls, and a pair of Great Black-backed Gulls; and, according to the light-keeper, a pair of Choughs had successfully hatched out and brought up a clutch of four eggs this season. During my stay at Carrick I ascended Slieve League, and was shown the eyrie of a pair of Golden Eagles (*Aquila chrysaëtus*), where they had been successful in

bringing up a brood this year. The owner of this estate, Sir James Musgrave, Bart., has, I am happy to say, instructed his keepers to protect this noble bird. Ring-Ouzels (*Turdus torquatus*) were very numerous on the mountain; but I searched in vain in hope of finding a nest. Wheatears (*Saxicola oenanthe*) were also numerous.

Ardara.—During a few days spent here fishing on the Owenea River, I saw large numbers of Common Sandpipers (*Totanus hypoleucus*)—they were probably nesting—as well as Grey Wagtails (*Motacilla melanope*); at the mouth of the river Black-headed Gulls, Common Terns, and Curlews were feeding. In the Woodhill demesne here several pairs of Spotted Flycatchers (*Muscicapa grisola*) were nesting, as well as numerous pairs of Chiffchaffs and Willow-Warbblers.

Dungloe.—The centre of the district known as the Rosses is perhaps the most desolate part of Co. Donegal; it consists of a region of rocks, hills, and numerous fresh-water loughs (where you can get the best of both Brown and White Trout fishing) on the mainland, and of rocky islands lying off its shores. The largest of the islands are thinly covered with peat and moss, and a few are cultivated to a slight extent. Aranmore, the largest, some 4335 statute acres in extent, I visited from Burtonport, landing at several parts during my sail round the island. I was fortunate in securing very intelligent boatmen, who were well informed on the birds of the island; they told me this was a stronghold of the Chough (*Pyrrhocorax graculus*), but unfortunately, even in this remote district, the commercial value of the eggs is known, and few are allowed to bring out their young unmolested. I was shown, in a cave, one nest which had been robbed by an old woman who lived close by, and who visited the nest every morning until the full clutch of eggs were laid, of which she knew the value; she had, however, to keep them for months unblown before a purchaser came along, who gave her thirty shillings for the four eggs. It is little wonder that this bird is becoming so scarce when such a premium is offered for the eggs. On the north and north-east coast I found large colonies of Common Guillemots, Razorbills, and Puffins breeding, and I was also able to make out with glasses a few Black Guillemots (*Uria grylle*) and Manx Shearwaters (*Puffinus*

anglorum); these latter were fairly numerous, and, as it was the first time I had seen them in their native haunts, I was very pleased, more especially when their identity was set at rest by one of the boatmen producing some of their eggs which he had taken the previous season. Rock-Pigeons (*Columba livia*) were breeding in large numbers in the numerous caves on the east coast; in one cave in particular they were so numerous that, on entering, I sank almost to the knee in their droppings. These caves are visited periodically by the islanders, who take the guano away in bags, and either use it on their own potato-patch or sell it on the mainland. On the west of the island, where the cliffs are some 500 ft. sheer down to the sea, Shags (*Phalacrocorax graculus*) were nesting in every conceivable fissure in the rocks. With glasses you could see the young birds straining their necks over the edges of their nests. I was fortunate to get a good view of a pair of Peregrines (*Falco peregrinus*) as they flew out from the cliffs uttering their screaming cry. One of the light-keepers told me that three pairs nested on the island this year, and that he had taken the young birds from one of the eyries.

Herring-Gulls (*Larus argentatus*) have a station at Rintaross Point, and were breeding there in large numbers.

At Roanish, a small rocky island to the south of Aranmore, Storm-Petrels (*Procellaria pelagica*) were breeding in even larger numbers than on Rathlin O'Birne; they are quite unmolested there, as there is no lighthouse station on the island.

During a fishing expedition on Dungloe Lake (July 10th) I had the good fortune to make my first acquaintance with the Red-throated Diver (*Colymbus septentrionalis*). The bird was seen circling overhead by my boatman (who was well acquainted with the species), as if going to alight, but on seeing us it took alarm, and made for a small mountain lough further up, where a pair have nested for years. The boatman informed me he has taken the eggs from this lough for several seasons, where the nest is placed on a small islet, and, as there is no boat, one has to swim out to it. This year he took the first and second clutches of eggs, and allowed the third to be incubated, and on one occasion he took three clutches, but still the poor birds were undaunted, and laid a fourth. He says one egg is always addled; I think it is little wonder after such persecution, and have no doubt if the

first lot were left they would both prove fertile. I had the pleasure of seeing this pair and their solitary young one on the lake ; they come down by easy stages from lake to lake until they reach the sea.

On fishing expeditions I visited most of the larger of the Rosses Loughs, and, as they are studded with small islets, they were the favourite breeding-ground of innumerable Terns, Common and Arctic ; and on one lough (Alecmore) I found a large colony of Common Gulls (*Larus canus*) with their young, who were now fairly strong on the wing, and able to swim well. A pair of Red-breasted Mergansers (*Mergus serrator*) inhabit this lough ; I discovered the nest among a clump of brambles on an islet, and it contained about ten eggs, which were well covered up with down.

At Crohy Head (where some ships of the Spanish Armada were wrecked) I found a nest of the Kestrel (*Falco tinnunculus*) with young ; the nest was in a very steep part of the cliff, but easily seen from above by leaning over the edge ; it is close by here that the soap-stone quarries are situated, but owing to the unsafe anchorage for vessels the quarries are not now worked.

Dunfanaghy.—This is the stopping-place for the unrivalled promontory of Horn Head. I had only one day to spend here, so visited it on foot from the mainland, although the best way to see its full magnificence is by boat. Accompanied by Strain, the cragsman, I was shown the site of three eyries of the Peregrine (*F. peregrinus*), from two of which my guide had taken the young Falcons, and sold them for one pound apiece. The remaining nest had baffled all his efforts to approach, as it was protected by an overhanging rock, and consequently he could not swing himself into it by a rope from above. I lay above this eyrie and watched the parent birds, who sat on a cliff opposite, and afforded me the pleasure of a good view through my field-glasses. Strain tells me all the young Peregrines hatched on the Horn are driven away by the parent birds for nesting-sites to the Muckish Mountains, where, he says, he also goes for young Falcons. The innumerable quantities of seafowl which inhabit the Horn baffle all description. I found Puffins, Razorbills, Common Guillemots, Kittiwakes, Herring-Gulls, each on their own allotted ledges, busy in their work of incubation, or feeding their young. Strain, who

is a fearless climber, descends the cliffs by the aid of a rope every season, and takes a large number of eggs. This he has permission to do from the landlord, on the understanding he leaves the second lot of eggs to be hatched. He holds there is a distinct species in the Ringed Guillemot (*Uria ringvia*), and during the season comes across their eggs on the same ledges as the Common Guillemot; some eggs he showed me, however, could not be distinguished from some of the eggs of the last-named species. I am glad to say the Chough is being protected here, and two broods were reared this year. I was sorry my time was so limited, else I would have visited Tory Island, which lies some seven miles out at sea, and have no doubt would have been amply repaid.

I cannot better conclude than by quoting Thompson in his 'Birds of Ireland,' who, on visiting Horn Head, says:—" By the philosophical student of Nature, however, the mighty scene before him, comprising earth, ocean, sky, each in its sublimity, will be considered before he turns his attention to its beautiful adjuncts—the feathered race."

NOTES AND OBSERVATIONS ON THE MAMMALS
COLLECTED AND OBSERVED IN THE DAR-
BHANGA DISTRICT, TIRHOOT, BENGAL.

BY GORDON DALGLIESH.

THE following mammals are those which came under my notice during a three years' residence in the above district. I am aware that the list is sadly deficient in the smaller mammalia, as Mice, Bats, &c., and if the district was efficiently worked, it would, I feel sure, yield many more species.

Macacus rhesus, Aud. (Bengal Monkey).—Very common in the wilder and more wooded parts of the district. They do great damage to the native crops at certain seasons. They are very easily tamed when taken young. One that my father had some years ago was very attached to a dog, hardly ever leaving its side, and when the dog took a walk the monkey would ride on its back. Another one I heard of had a great liking for whisky, and would help himself out of the glasses at table. They generally go about in small parties. They are regarded as sacred by the Hindoos.

Semnopithecus entellus, Dufr. (Langú).—This fine Monkey is not very common. One used to visit Dalsingh Serai Factory periodically for some years, and was not at all shy, but would almost take food from one's hand. It is also sacred to the Hindoos.

Felis chaus, Güld. (Jungle Cat).—One or more are nearly always to be found in grass and thorn jungle, and I very often turned them out of the drains that ran under the indigo-vats at Hattowrie and Dalsingh Serai Factories. They show fight remarkably well when tackled by dogs, and run swiftly and climb well. They breed about March in those parts, as I have seen very small kittens in April and May. They are exclusively carnivorous in their tastes and bloodthirsty, and, if they once find their way into a fowl-house, will not leave a bird alive. I have

several times caught them in traps baited with putrid meat that were really set for Jackals.

Viverra zibetha, Linn. (Large Indian Civet).—I have never seen this species alive, but saw one or two skins that were said to have been procured in the district.

Viverricula malaccensis, Gmel. (Small Indian Civet).—My friend Mr. C. M. Inglis has informed me he has procured this species in the Madhubani Sub-Division Darbhanga, but I never came across it myself.

Paradoxus niger, Desm. (Indian Palm Civet).—Very common. I have twice shot this species, while it has been in the garden after fruit, of which it is very fond. They have a very disagreeable odour when excited.

Herpestes mungo, Gmel. (Common Mongoose).—Abundant everywhere. When taken young it becomes exceedingly tame, and makes an amusing pet. One I had was very fond of fish, and would devour a dozen small ones $3\frac{1}{2}$ in. long at a meal, and have eaten more had I given it. They will also eat frogs, insects, and snakes, and also at times will kill rats. I think they breed in May and June, as I have had very small ones brought to me during those months.

Canis pallipes, Sykes (Indian Wolf).—Rare. Solitary examples occur from time to time. One was seen in a village a few miles from Hattowrie in June, 1901.

Canis aureus, Linn. (Jackal).—Very common. Found during the cold weather among sugar cane and long grasses, but in the hot weather they resort to their earths, usually among grass jungle. Their food consists of carrion, smaller animals, and birds. They are very tenacious of life, and I have seen one recover from a severe blow on the head—that would have killed most animals—and attempt to escape. I have often caught them in a large box trap baited with a dead fowl. Four young ones were dug out of an earth at Hattowrie in April, 1901, and I tried to rear them, but they all died after a few weeks. During the time I had them they were very quiet by day, but at nightfall commenced to whine dismally. The cry of the Jackal is one of the most weird sounds I have ever heard, and is said by Europeans in India to resemble the words, “a dead Hindoo.”

Vulpes bengalensis, Shaw (Common Indian Fox).—Abundant

throughout the district. Their earths are situated as a rule in open fields and have several openings to them. This pretty little Fox is by no means shy, and often comes close to houses. Their cry is a chattering bark, and during the breeding season they make a squealing (or half snarl, half squeal) sound quite unlike their usual cry. They are at this time very bold, and on one occasion a vixen with cubs turned on a dog which was chasing her and caused him to beat a hasty retreat; twice this performance was repeated. The young are born from February to April. They do not appear to live on carrion as does the Jackal, but on fruit and large locusts; the wings and legs of these insects I have often seen scattered about the mouth of their burrows. I once saw one which deliberately deceived myself and the dogs by appearing to be lame and limping on three legs until the dogs were within a few yards; then it went off at full speed, proving there was nothing wrong with it.

Mustela flavigula, Bodd. (Indian Marten).—One was killed at Hattowrie Factory in April, 1898, and two at Dalsingh Serai in May, 1900. These animals had a most unpleasant odour, which was perceptible many yards distant from where they lay.

Lutra vulgaris, Erxl. (Common Otter).—Common, especially so round Hattowrie and Russelpur. A dog Otter, killed at Hattowrie in May, 1901, was lying in a drain near a small pond and was driven out by the dogs. Two half-grown young were caught in the reeds of Hattowrie Lake in the same month. They were very fierce and bit furiously when handled. A fine male, killed at Russelpur Factory in November, 1898, weighed 28 lb. When taken very young they are easily tamed, and some of the natives train them to catch fish.

Crocidura cærulea, Kerr (Grey Musk Shrew).—This little animal, commonly known to Anglo-Indians as "Musk Rat," is very plentiful. They are common in most dwelling-houses. Their cry is very sharp and ear-piercing. They have a curious habit of running round the room as close to the walls as possible. Their food appears to consist of insects, but some naturalists have said they will eat frogs and young birds.

Pteropus medius, Temm. (Indian Fruit Bat).—Very common during the rainy season, but I have not often noticed it during the cold weather. Numbers used to come to Dalsingh Serai Factory

towards nightfall and settle on the fruit trees. They never came all at once but singly or in pairs, flapping slowly after each other. Before alighting on the tree, they always flew slowly round once or twice. The late comers were invariably ejected by their more fortunate earlier companions, and then much flapping and screeching took place. On the road to Begum Serai is a large dead cotton tree, which is always covered during the day by hundreds of these Bats roosting. They are known to Anglo-Indians as " Flying Fox."

Rhinolophus affinis, Horsf. (Allied Horseshoe-Bat).—I found this Bat very common at Dalsingh Serai. They frequent old buildings and drains during the day.

Megaderma lyra, Geoffr. (Indian Vampire Bat).—I found this Bat fairly common at Dalsingh Serai, but did not observe it elsewhere in the district. My specimens were all taken from an old barn, from the rafters of which they used to hang during the day. I once had a whole cage of small birds (Munias) killed by one of these Bats, which got in during the night.

Vesperugo abramus, Temm. (Indian Pipistrelle).—Abundant everywhere. This I found to be the first Bat to appear in the evenings. Numbers used to frequent the bamboos in the roof of my bungalow in the daytime.

V. serotinus, Schreb. (Serotine).—It is with some hesitation I add this species to my list, but I caught a Bat at Hat-towrie in August, 1901, that I am nearly sure was this species. It was in poor condition and most of the fur worn off the belly. It measured : head and body, 2·4 in.; tail, 1·1 in.; forearm, 4 in.; hind foot, ·4 in.

Cerivoula picta, Pall. (Painted Bat).—I once procured several of this species at Dalsingh Serai in the cold weather of 1897. They were taken from under the beams of an old bridge that was being repaired. The females had naked young clinging to them.

Sciurus palmarum, Linn. (Palm Squirrel).—Very common in most parts of the district, scarce or entirely wanting in others. This is perhaps one of the most familiar of Indian mammals, and its naturally fearless nature makes it an amusing pet. They feed chiefly on fruit and occasionally rob birds' nests. A pair that used to live in the roof of my bungalow became very tame, and would jump on to the breakfast table when no one was there.

and eat the crumbs. I have had young brought to me throughout the hot weather, so I presume they have several litters in the year. Their alarm cry is a sharp twittering sound, very birdlike.

Gerbillus indicus, Hardw. (Indian Gerbille).—Very common. It makes extensive burrows in open fields and cultivations. The young are born in January and February, generally three to four at a birth. I procured many of this and other species by flooding their burrows with water. I once took nearly half an ordinary sack of wheat from one of their burrows. They run extremely swiftly, very often using only the hind legs and springing like a Kangaroo.

Vandeleuria oleracea, Benn. (Long-tailed Tree Mouse).—I have never come across this species myself, but Mr. C. M. Inglis says, writing about the Black-throated Weaver bird (*P. bengalensis*) : “ Many eggs are destroyed by the pretty little Longtailed Tree Mouse. I have several times caught it in these birds’ nests.”

Mus alexandrinus, Geoff. (Black Rat).—This Rat is common everywhere.

M. decumanus, Pall. (Brown Rat). — Common, but not, I think, so much as *M. alexandrinus*.

M. musculus, Linn. (House Mouse).—Only too common.

M. buduga, Gray (Indian Field Mouse).—I caught only one specimen of this pretty species at Dalsingh Serai in August, 1901. I found it in an indigo-vat, brought in evidently with the plant. No doubt it is common.

Nesocia bengalensis, Gray (Mole Rat).— Very common. Its burrows are always well marked by the heaps of earth thrown up round the mouth of them. Above ground it is slow in its movements, and one I had under observation attempted to bite savagely when handled. The specimen I had was kept in a very thick wooden box, but it gnawed its way out one night and so escaped. It seemed very sensitive of light and always chose the darkest part of the box. This species, with other rats and mice, forms one of the articles of food of a certain caste of natives known as “ Moosoores.”

Hystrix leucura, Sykes (Indian Porcupine).—Common, but being nocturnal in its habits, they are not very often seen. They make extensive burrows, and in one place I saw a barn that had been completely undermined and the flooring destroyed by these

animals. They do considerable damage to fruit and vegetables. One ate a whole row of pineapples in a garden which I knew. I had some young a few weeks old brought to me at Dalsingh Serai in July, 1901. Young Porcupines, when roasted, are considered great delicacies by some people, but I never could make up my mind to eat one myself.

Lepus ruficaudatus, Geoffr. (Common Indian Hare).—I found this species fairly common at Hattowrie in fields of young sugar cane, and have had young brought to me at Dalsingh Serai, which I tried to rear, but they always died after a few days.

Bos gaurus, Ham. Smith (Gaur).—Mr. Inglis had a young bull brought to him, which was caught in the Madubani Sub-Division.

Boselaphus tragocamelus, Pall. (Nilgai).—The Nilgai are not uncommon in certain parts of the district. I once saw a young tame male. A curious fact about this one was, that it had a great liking for the smell of cigar smoke, which, if blown into its face, it would eagerly sniff up. It would also eat cigars and paper if offered to it.

Cervus axis, Erxl. (Spotted Deer).—An occasional visitor to the wilder parts of the district.

Sus cristatus, Wagn. (Indian Wild Boar).—Abundant wherever there is any heavy jungle. A number were nearly always to be found in some large grass jungle near Hattowrie. They are very fond of wallowing in mud, and such places where they have been are often met with. They come into gardens occasionally to eat the vegetables. Pig-sticking is a favourite sport with Europeans in this district.

Platanista gangetica, Lebeck. (Gangetic Dolphin).—I have occasionally seen this species on the Keray River, near Hattowrie.

THE T F O R D W A R R E N .

By W. G. CLARKE.

THE T F O R D W A R R E N , in the parliamentary division of North-west Suffolk, but for administrative purposes included as part of the borough of Thetford, in the county of Norfolk, is interesting not only for the extent and variety of its bird-life, the arid wilderness which for more than a century past has been its characteristic, and the rare plants and insects that here have their habitat, but also for the indications it gives of the varying economic value and utility of a certain area of land. It is slightly less than three thousand acres in extent, and the number of neolithic flint implements found on its surface prove that the district must have been populous in later prehistoric times. One of the rarest and most exquisitely worked neolithic implements ever found in the locality was a double-edged flint saw less than two inches in length, with nearly thirty teeth on each edge, which was picked up from a rut in a sandy trackway near the middle of the Warren. There is a tradition of a "white horse" cut on the rolling slopes of the East Anglian Heights within the vicinity of the Warren, but the exact spot is not now ascertainable. In early times, probably before the Norman Conquest, portions of the Warren were arable land. In 1274 the Cluniac prior at Thetford was returned to furnish, at his own expense, ten archers for forty days, whenever the king went against the Welsh in person. The land for which this service was rendered was part of Thetford, or, as it was then termed, Westwick Warren. In the sixteenth century it was almost devoted to profitable pastures and fold-courses, and was also a favourite locality for "Kite-hawking." There is no record of a Kite having been killed on the Warren since 1857. Writing in 1622 of the junction of two streams less than a mile from the Warren, Drayton said :—

" Where since their confluent floods so fit for hawking lye,
And store of fowl intice skill'd Falconers there to fly."

All the meadows bordering the lighter soil of the Warren appear to have been Lammas Meadows until the Enclosure Act of 1806, when they and the Warren were allotted to private owners.

Until the early part of the nineteenth century this area was chiefly valuable as arable and pasture land, and possibly the Warren Lodge, a quaint building almost on the highest point of the Warren, was built by the monks to guard their crops in this lonesome spot. The walls of the older part of the building are over three feet in thickness, the only entrance is by a narrow doorway, and the solitary window on the ground floor is a mere slit in the wall. One room contains the apparatus for drying Rabbit-skins, although the process has long been discontinued. Large numbers of traps, nets, and huge lanterns used by former warreners, are also preserved, but the man-traps at one time stored here have been removed. In one corner of the ancient room on the first floor is a stone cell with a niche. A tube about six inches square, in the thickness of the wall, runs downwards from this room to the porch, presumably for verbal communication at night. The spiral staircase is of stone, very low and very narrow, while the ancient well—in what was probably at one time the courtyard—is 103½ ft. deep.

In the middle of last century the Warren was a treeless waste devoted entirely to Rabbits. Its aspect at that time is well depicted in the second volume of Stevenson's 'Birds of Norfolk.' The scene was sketched on the spot about 1868 by Mr. James Reeve, now the Curator of Norwich Castle Museum, and the Heron, Stone Curlews, Lapwings, and Rabbits were "painted in" by Mr. Joseph Wolf, the noted zoological artist. It is probable that Rabbits have for centuries been more or less common on some parts of the Warren. Mr. J. D. Salmon, F.L.S., crossed the Warren in March, 1837, to see the new stock of Rabbits from Lincolnshire. They were commonly known as "silver-greys" or "silver-sprigs," and their fur was much more valuable than that of ordinary breeds. About 1870 twenty thousand Rabbits were annually sent from this Warren to London, but the variety is now virtually extinct in the district, and the ordinary grey and black Rabbits have greatly decreased since they ceased to be properly tended in winter. Yet the locality has still an undoubted attraction for Weasels and Stoats. In

1893 two hundred of the latter were trapped in six weeks, and in the following year one hundred in fourteen days. During the past twenty years hundreds of acres have been planted with trees, and the general appearance of the Warren has thus been entirely altered. Most of the remaining portion is covered with stunted herbage and lichen, and in summer by bracken, heather, and short grass.

Until this attempt at afforestation, even in a district remarkable for its wildness—there are twenty large heaths within six miles of Thetford—the Warren was pre-eminent. Plants, insects, and birds whose usual habitat is the sea-coast are here found inland, having probably survived from the time when a strait divided Norfolk from the rest of East Anglia in the post-glacial epoch. Two or three plants of the sand-dunes still grow plentifully; eight species of Lepidoptera usually confined to the vicinity of the sea are more or less common; and a small class of moths is practically confined to this district, owing to their caterpillars' food-plant being found only in the vicinity. *Helix virgata* and other species usually considered littoral are found on the same heaths and warrens. Thetford Warren is one of the very few inland nesting-places of the Ringed Plover. Their return in the spring is probably due to hereditary instinct transmitted through countless generations. They were "very abundant" at Thetford in 1836, but of late years the number of pairs nesting in the locality has been extremely limited. A few Dunlins and Dotterel are observed on the Warren almost every year; Golden Plover have been seen at odd times; and it is one of the last strongholds of the Stone Curlew. The first Stone Curlew described to science was one killed in the neighbourhood of Thetford in 1674, and forwarded to Ray by Sir Thomas Browne. About Christmas, 1881, a Little Bustard was caught in a Rabbit-trap on the Warren, and there is reason to believe that a nest found here in 1832 was the last of the Great Bustards in Suffolk. The Bustards were probably as numerous here as anywhere in England, and it is unfortunate that those which Lord Iveagh endeavoured to naturalize in the adjoining parish of Elveden should have wandered in another direction, and not taken up their abode on these wastes, where safety would have been practically assured. A somewhat similar attempt was made in 1885

to acclimatize Black Grouse, but the half-dozen turned out in the autumn did not survive the winter. Pheasants and both species of Partridge are common. The Stock-Dove nests in Rabbit-holes with comparative frequency, and it is probable that at one time the Common Sheld-Duck also occupied similar quarters during the nesting season. The Wheatear, which usually arrives on the Warren about March 25th, is very common. Sand-Martins frequent the chalk-pits—one of which was in existence five hundred years ago—and Common Snipe nest on the low-lying meadows. In April, 1893, the writer counted sixteen gyrating at one time over the marshy parts of the Warren. Although there is no actual record of the occurrence, it can hardly be doubted that the Short-eared Owl has nested, and does occasionally nest, on Thetford Warren, for its eggs have been found in similar localities but a mile or two distant. Lapwings have decreased in number of late years, chiefly owing to those who consider their eggs a delicacy, and so make collecting profitable. Among the occasional visitors to the Warren are Peregrine Falcons, which may almost be classed as annual visitants, and Pallas's Sand-Grouse. A large flock of the latter was observed in 1863. The Marsh-Harrier has been shot; Rough-legged Buzzards secured at various times (undoubtedly many more than those of which we have record); two White-tailed Eagles were trapped in the winter of 1832-3; and in December, 1846, a Hoopoe was here found dead. An immature Falcon was killed on this Warren in the spring of 1883, and, although there is great difficulty in differentiating the Iceland Falcon and the Scandinavian Gyr-falcon in this state of plumage, it was eventually assigned to the latter species. On this occurrence rests its sole right to be included in the Norfolk list.

NOTES AND QUERIES.

MAMMALIA.

The Dormouse in Cardiganshire.—I was not aware of the occurrence of this little animal (*Muscardinus avellanarius*) in the Aberystwyth district until the 16th of June last, when I found, in a furze-bush, a nest, much like a Wren's nest, but more nearly spherical, and had a good view of the occupant, as it emerged upon my inserting a finger. I shortly afterwards found a similar nest in a locality some three miles distant, so it is quite possible that this species may be not uncommon in North Cardiganshire.—J. H. SALTER (University College, Aberystwyth).

AVES.

Variety of the Hawfinch.—A very pretty variety of the Hawfinch (*Coccothraustes vulgaris*) was shot at Bramford, near Ipswich, about Feb. 8th. It is an adult male, having the wings and tail nearly white, the back pale cinnamon-brown, and the throat-patch sooty grey. I have only seen one other variety of this species, and this was in the collection of the late Mr. F. Bond.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

The Status of the Goldfinch (*Carduelis elegans*) in Britain (cf. ante, pp. 28 and 70).

Brecon.—A fairly common resident, nesting sparingly all over the lowlands of the county, and occurring in small flocks on waste lands in autumn and winter. The district adjoining the north shore of Llangorse Lake is a favourite haunt in summer.—E. A. SWAINSON (Woodside, Brecon).

Denbighshire.—Common as a breeding species all up the Ceiriog Valley and adjacent country.

Carnarvonshire.—Sparsely distributed in the Lleyn peninsula, and resident.

West Cheshire.—A few odd birds frequent the Dee Cop in hard weather every year. Rare in summer.—S. G. CUMMINGS (King's Buildings, Chester).

Somerset (Western District).—Resident, not uncommon, assembling

in flocks on the moorlands at approach of autumn. Steadily increasing during late years, and would become *very* frequent were it not for the bird-fanciers, who catch hundreds in a season (autumn and winter).—**STANLEY LEWIS** (Wells, Somerset).

Cambridgeshire.—Formerly it used to be very abundant, and even within the last ten or twelve years I have met birdcatchers who have caught eight or ten dozen in a day, though this must be regarded as exceptional. During 1898–1896 I have frequently known two or three dozen to be caught, and looked upon by the catchers as an average day's work. They are still by no means rare, and breed in the gardens of most of the villages, especially near the fens, where many family parties may be met with in autumn feeding on the thistles that abound in the rough pasture-land.—**J. L. BONHOTZ** (Ditton Hall, Fen Ditton, Cambridge).

Hertfordshire.—Increased very prominently in this county during the last three or four years.—**W. PERCIVAL WESTELL** (St. Albans, Herts).

Yorkshire—Scarborough.—I have been an observer of birds in rural England for nearly thirty years, as a resident in both southern and northern counties. All the wild Goldfinches I have ever seen would not number a dozen, yet I never go anywhere from home without making a list of every bird seen. A nest of young ones, I have reason to believe, was taken near here in 1897, but I only saw the empty nest, which might have been a Lesser Redpoll's. Here confusion of common names sometimes arises through the Yellowhammer being called "Goldie." My limited experience with this bird may evoke a smile from more fortunate ornithologists. I have, however, spoken of the Goldfinch as I know it.—**W. GYNGELL** (Scarborough).

Devonshire.—No increase since publication of 'Birds of Devon' (1892). Have not seen any since March, 1898. Mr. E. A. S. Elliott thought at one time the bird was becoming more plentiful near Kingsbridge, but now writes: "There are still a few about. I sometimes see single birds on the coast in spring. It looks as if they had crossed the Channel." Great numbers perished in the severe winters of the last half of the past century. Up to 1880 Goldfinches were taken in considerable numbers by Exeter birdcatchers.—**W. S. M. D'URBAN** (Newport House, near Exeter).

A Habit of the Lesser Redpoll (*Linota rufescens*).—With reference to this subject by Mr. Blathwayt (*ante*, p. 26), the following remarks may be of some interest. This is a fairly common breeding species in this part of Cheshire, and I can endorse Mr. Butterfield's assertion

(*ante*, p. 72) that it rarely forsakes its nest unless the provocation be great. My impression is that when one of the Finch tribe does desert its nest, it never returns to it for any purpose. To this, as to most things in nature, there may be, and no doubt are, exceptions. I have known a Bullfinch lay four eggs in the same nest from which the two eggs had been taken a week previously, but this, in my opinion, is a rare occurrence. That birds do occasionally remove their eggs there can be little doubt, but whether they place them in new nests or simply make away with them is a difficult matter to prove conclusively. The former seems to me extremely unlikely, as it would involve hiding the eggs temporarily until the new nest was built—a reasoning power which we cannot suppose that birds possess. Though I have found many nests of the Lesser Redpoll in various situations, I never yet came across one in a fir-tree. The site mentioned by Mr. Butterfield must be somewhat unusual, and perhaps peculiar to those localities where conifers abound. No bird, I venture to say, more frequently betrays the whereabouts of its nest, in whatever stage it may be, than the Redpoll; a nest was once brought to my notice by the twittering noise made by the sitting bird.—S. G. CUMMINGS (King's Buildings, Chester).

Nesting Habits of the Lesser Redpoll (*Linota rufescens*).—May I be allowed to give a little negative evidence on the subject broached by your contributor, whose experiences lead him to suppose that the above-named species easily forsakes her eggs? On June 3rd, 1899, near Scarborough, I found a nest of this bird in a hazel-bush five feet up. It contained three eggs. As I wanted these, I took and replaced them with three eggs of the Whitethroat. Visiting the nest again on June 11th, I found that the Redpoll had laid another egg in the same nest amongst the introduced eggs of the Whitethroat, and was then sitting upon them, all four eggs being considerably incubated. I think this sufficient evidence that at least this individual bird was not very sensitive to interference. I may say that I very rarely tamper with birds' eggs in the way above described, and that I consider it bad form. I have found several other nests and eggs of this species, but have no other evidence to offer on the point raised.—W. GRYGELL (18, Gladstone Road, Scarborough).

The Lesser Redpoll in Cardiganshire.—I have hitherto looked upon this species as being decidedly scarce in the Aberystwyth district, and was doubtful whether it nested with us; but, having kept several in an aviary during the past eighteen months, I became familiar with its song and call-notes. The result was that I identified the Redpoll

frequently during the past spring, and should now describe it as local, but not uncommon. In one locality some two miles distant, where a neglected orchard enclosed by overgrown hedges offers the additional attraction of swampy ground with willows close at hand, at least half a dozen pairs must have nested. Others seen twenty miles away, near Tregaron, were also in the willows, no doubt collecting down for their nests.—J. H. SALTER (University College, Aberystwyth).

White-tailed Eagle in Suffolk.—Mr. Hudson, the Ipswich bird-stuffer, recently showed me a fine young White-tailed Eagle (*Haliaëtus albicilla*), shot on Feb. 9th within about three miles of the town. A man shooting Wood-Pigeons had propped up a dead one as a decoy, when the Eagle swooped down and began to devour it, thus affording an easy shot to the concealed gunner. The bird was a female, weighing about nine and a half pounds, and had been feeding on Rabbits.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Purple Heron in Hertfordshire.—Whilst in the hands of the taxidermist, I recently examined an immature specimen of the Purple Heron (*Ardea purpurea*) that was shot from the watercress-beds at Castle Farm, near Harpenden, by Mr. George Adams, in November, 1902. It has since passed into the possession of Mr. C. Arnold, of Battord Mills, who has kindly confirmed these particulars.—J. STEELE-ELLIOTT (Dowles Manor, Shropshire).

Variability in Colour in Duck's Bill.—As great interest is at present being taken in the various forms of Geese met with along our shores, which are to a certain extent characterized by the colour and markings of the beak, it may not be out of place to note two instances of variation among Ducks which have recently come under my notice, as showing how little reliance must be placed on those characters for determining races. The first is the case of the Bahama Ducks, in which it was found that among fresh-shot birds the colour of the triangular patch on the bill varied from deep crimson-lake to pale yellow, irrespective of sex. The other instance is that of a Mallard Spot-billed hybrid, which I have in my aviaries. For three years this bird had a black bill with the characteristic yellow spot of the Spot-bill, but last summer the yellow gradually encroached on the black till the latter colour was confined to a stripe along the culmen, and a transverse stripe from the culmen to the edge of the bill; in this state it remained for some four months, when it gradually returned to its former condition.—J. L. BONHOTÉ (Ditton Hall, Fen Ditton, Cambridge).

The Rock-Dove (*Columba livia*) inland in Somerset.—In the celebrated Cheddar cliffs the Rock-Dove has its stronghold. It suffers very little molestation from egg-collectors, owing to the inaccessible heights at which it nests, although I have on two occasions secured a pair of eggs. The nests consisted simply of a few twigs on a moss-grown ledge of rock, the eggs being smaller and more spherical than those of the Ring-Dove. I have seen these birds dart out one after the other with great swiftness from the ivy-covered faces of the cliffs at the disturbing sounds of the visitors, or the cries of the Kestrels; and they have doubtless existed here in their pure and wild state through centuries.—STANLEY LEWIS (Wells, Somerset).

Notes from Aberdeen—January–February.—A rather large flock of Snow-Buntings (*Plectrophenax nivalis*) moving about the whole time. Two Bullfinches (*Pyrrhula europaea*), male and female, appeared on Jan. 12th. A Lapwing (*Vanellus vulgaris*) seen and heard on Feb. 11th, flocks appearing about ten days later, earlier than usual in this neighbourhood. Have noticed attempts by Larks to sing during last days of February, but only heard complete song on the 28th of that month.—W. WILSON (Alford, Aberdeen, N.B.).

Birds killed by Ticks.—On Sept. 1st, 1901, I picked up a young Stock-Dove, fully fledged and nearly full grown, in our wood here. It was in an exhausted condition, only just alive, though well fed, and its crop full of vetch-seed, with a few grains of wheat. On examining it I noticed two large Ticks distended with blood, one above and the other just below the left eye, which was completely destroyed. There were several other Ticks on the head, seven or eight altogether. On the 18th of the same month I found a young Blackcap Warbler lying dead near a fig-tree, the fruit of which is a great attraction for birds, with a large Tick on the throat and another on the forehead. I have picked up scores of dead birds of different species from time to time, but never before noticed any that had Ticks on them.—W. S. M. D'URBAN (Newport House, near Exeter).

"Do Wild Birds die instantly?"—The notice of Mr. Wm. Earl Dodge Scott's paper in the 'Outlook' on the above subject in the last number of 'The Zoologist' (*ante*, p. 79) reminded me of a singular occurrence in California at the end of December, 1886. I was living near Goleta, in Santa Barbara County, and had daily occasion to pass by a certain field. For several days I had seen on the opposite side of the field what looked like a burnt stump, but took no further notice of it, until one day, having my dogs with me, they rushed across the field, and commenced barking furiously around the object I had seen.

My curiosity being aroused, I crossed the field to investigate the matter. On reaching the spot I was surprised to find it was a Turkey Buzzard (*Cathartes aura*) squatted on the ground and unable to rise, and I discovered it was in a semi-paralytic condition. I carried it home and placed it in an outhouse, where it remained for several days more, when, finding it did not recover, I killed it. On removing the skin I could find no injury, though there were several pellets of dust-shot just under the skin, but nothing to account for the helpless condition of the bird. The whole body and the intestines were covered with fat to a surprising degree. On opening the stomach I found inside it a very small revolver or pea-rifle bullet which had been flattened by striking against some hard object. There was no perceptible wound nor any inflammation of the coats of the stomach, which had nothing else in it but a small quantity of dark green fluid. I imagine the bird had swallowed the bullet when devouring some dead animal, probably a "Squirrel" (*Spermophilus grammurus*), a most destructive rodent existing in vast numbers all over California, notwithstanding that every man's hand is against it. The farmers' boys constantly practise with pea-rifles at these "Squirrels," and they are also destroyed wholesale by the use of strychnine on most of the large ranches. Possibly the Turkey Buzzard had swallowed some of this poison, which has led to the almost complete extermination of the noble Californian Condor (*Pseudogryphus californianus*) in Santa Barbara County. The carcases of dead Sheep were poisoned to destroy Coyotes, but were eaten by the Condors. The great length of time—over a week—the unfortunate Turkey Buzzard lived without feeding struck me as strange, though I have known hens, when sick, live for a long time, although refusing food.—W. S. M. D'URBAN (Newport House, near Exeter).

NOTICES OF NEW BOOKS.

In the Andamans and Nicobars; the Narrative of a Cruise in the Schooner 'Terrapin,' with Notices of the Islands, their Fauna, Ethnology, &c. By C. BODEN KLOSS. John Murray.

We recently drew the attention of our readers to another volume, by Dr. Alcock, on the zoology of this region, which was almost entirely devoted to the fauna of the Indian Seas ; the present work describes the principal islands in the Bay of Bengal—the Andamans and Nicobars—with a very full account of their human inhabitants, and some scattered information as to other animal life. Although the nearest islands of the Nicobar and Andaman groups are only separated by a distance of eighty miles, the divergence in fauna and flora is most profound. In mankind there is not a simple difference of race, but a real distinction in type ; whilst the coconut palm—such an abundant feature of the Nicobars—is, with the exception of the Cocos Islands, absent from the Andamans in a naturally propagated condition. We mention these two examples as indicative of what occurs in both faunas, and floras, in numerous other though less marked instances. Even in the Nicobars, the Monkey (*Macacus umbrosus*) does not extend to a more northerly island than Kachal, and Mr. Kloss remarks on "the absence of this genus from the Andamans," although in a subsequent synopsis of the mammalian fauna of the two groups, as given by Mr. Gerrit S. Miller, *M. coiniinus* (evidently a misprint for *M. leoninus*) is given as inhabiting the South Andaman, though almost certainly introduced.

Anthropologists will welcome this book ; its photographic illustrations of the Nicobarian inhabitants will alone render it notable to that science. The British Eclipse Expedition which visited Kamorta in 1875 also took some excellent photographs, to which those now provided by Mr. Kloss will prove a valuable

supplement. The Anthropological Institute in 1877 published a preparatory list of publications relating to the Nicobars, most of which seem to be referred to by Mr. Kloss, who has moreover, himself, given a useful summary of many writings relating to these islands from the time of Ptolemy. Of all the ethnological illustrations, none are of more interest than those of the Shom Pen, who inhabit the interior of the Great Nicobar. These people were till recently only known by report and tradition, and were on those grounds usually considered as of the Negrito race. Dr. A. B. Meyer, in his classical work on the Negritos, had, however, shown the hypothesis to be untenable, or at least unproved; and now the photographs of Mr. Kloss have given absolute contradiction to the supposition.

The "headmen" of the Nicobar Islands have a partiality for taking the names given to them by traders, and others who visit them. The Editor of this Journal, who spent some weeks at Kar Nicobar in 1868, is naturally somewhat astounded to read—and after an interval of thirty-three years—that among other celebrities, as Sam Weller, Tom Noddy, Corney Grain, &c., a Nicobarian still does him the honour to bear his name, even to the correct initials.

Text-Book of Palaeontology. By KARL A. VON ZITTEL. Translated and Edited by CHARLES R. EASTMAN, Ph.D. Vol. II. Macmillan & Co., Limited.

IN our volume for 1900 we published a notice of the first volume of this excellent translation, which was altogether restricted to the Invertebrata; the present volume, devoted to the Vertebrates, carries on the subject as far as the class *Aves*, while the treatment of the *Mammalia* is reserved for a third and final volume.

Although the authority of Zittel is pre-eminent in palaeontology, still time, with the facts of fresh discoveries, is always demanding new and revised editions of the most canonical writings. With the concurrence of the author this course has been considerably pursued with the present volume; Dr. Smith Woodward has translated and revised the class *Pisces*; Dr. E. C. Case, of Wisconsin, has performed the same duty with the

Amphibia; and other good authorities have assisted with remaining groups. Prof. Marsh was to have revised the *Dinosauria*, but this was prevented by the regretted death—or, as Mr. Eastman writes, “the final passing”—of that distinguished palæontologist.

This book is one for recognition rather than criticism. It is one to which the zoologist may safely refer for nearly the last word on palæontology, and as such is a, or rather the, recognized authority. Criticism can only be advanced by specialists on special groups, and does not affect the main thesis. The volume is now of a greater necessity to zoologists than it would have been formerly. Zoology has become less restricted to a knowledge of what is living, apart from what is dead; to the present, without reference to the past. Palæontology—even with the imperfection of the geological record—is our principal key to the method and course of evolution, and in a purely zoological and taxonomic sense we may say with Wordsworth, and with a biological meaning, “Our birth is but a sleep and a forgetting.”

Zoological Wall-Tables. Drawn and Edited by PAUL PFURTSCHELLER, Ph.D. A. Pichlers Witwe & Sohn, Vienna and Leipsic.

We have received Tables 4 and 5 of this series, intended for the use of schools—where higher zoology is taught—and science teachers. Tab. 4 represents *Mustelus vulgaris*, the ordinary species of the genus, and the most frequently found smooth-skinned Shark in the Mediterranean. This diagram is large, and portrays a female specimen with its ventral side opened, exhibiting the viscera and internal structure, and surrounded by sectional illustrations. One, magnified six times, shows the egg of a *Scyllium*, with the embryo just emerging, and wearing the large vitelline bag. Tab. 5 relates to the Echinoidea, and to *Sphaerechinus* sp., and by the ample size shows not only the internal anatomy, but also details of its complicated external structure. These large wall-tables are coloured, thus drawing attention to the principal organs, and are accompanied by descriptive leaflets printed in the English language, which should prove useful alike to scholar and teacher.

EDITORIAL GLEANINGS.

We have received from Mr. R. M. Dixon, of Bombay, a reprint of his paper on "The Senses of Snakes" (*Verhandlungen des V. Internationalen Zoologen-Congresses zu Berlin*). We give the following extract :—

" The organ of hearing in the Snakes is so obscure and defective as to lead one to believe that their sense of hearing was of varying delicacy, if not altogether wanting. Snakes possess not only no external ears for gathering and concentrating the vibrations of sound, but are also destitute of any external orifice by which these may readily enter the auditory organ. They have no tympanum and no traces of the Eustachian tubes. The tympanic cavity also is absent, and in its place there is a long columellar rod, *Columella auris*, with a special cartilaginous pad at its outer end, which plays against the middle of the shaft of the quadrate bone. This peculiar anatomical structure presumably produces a loud rumbling noise in the internal ear, as the *fenestra ovalis* is directly affected by the vibrations produced at every motion of the quadrate bones during deglutition. Hence there is reason to believe that Snakes can hear as distinctly as any other animals, though the auditory apparatus in the *Ophidia* is obscure and imperfect. The velocity of sound in the earth is far greater than that in air. Hence the vibrations of a sound mainly transmitted through the earth—as, for instance, the sound of a footfall—may reach a Snake on the ground quicker than one coiled up in the branches of a bush. In the same way the vibrations of a sound mainly transmitted through the air may reach the latter earlier than the former. The undulations may also be transmitted through the medium of water. The velocity of sound in water is four times as great as in air. Thus the vibrations of a sound transmitted through the medium of the earth, water, or air reach the essential organ of hearing whether the Snake is basking in the sun, swimming in the water, or lying coiled up in the branches of a bush. In Psalm lviii. 4, 5, Eccl. x. 11, and Jeremiah viii. 17, allusion is made to that singular phenomenon, the charming of Snakes by musical sounds. The Psalmist compares the wicked to 'the deaf adder that stoppeth her ear; which hearkeneth not to the voice of

charmers, charming never so wisely.' According to Indian folk-lore there is a common belief among the natives that the Nag or Cobra (*Naja tripudians*) is always a male, and that the Nagin, or female, is the graceful Snake (*Zamenis gracilis* or *Z. fasciolatus*). A similar belief probably prevailed throughout the East, and the Psalmist's 'deaf adder' was perhaps some Snake popularly believed to be the mate of the African Cobra (*Naja haje*), a frequent subject for Snake-charming in Palestine. At any rate, the proverbial 'deaf adder' possessed the organ of hearing, and yet she stopped her ear and paid no heed to the music which apparently fascinated other Snakes. The Snake-charmers of Egypt and India have been known from the earliest period. The mantras or incantations of these men have really no influence on other Snakes except over the reptiles trained to obey their call. The Cobra's fondness for music has been reported from time immemorial. The snakeman perhaps improves upon this natural instinct, and after a few weeks' training succeeds in teaching the reptile to keep time with the waving of his musical instrument."

A DISCUSSION recently took place in the pages of the 'Athenaeum' on a remark made by Sir David Hunter-Blair, that there was absolutely no mention of Fireflies in all the writings of antiquity. In opposition to this statement Dr. S. Birdwood has given the following quotations:—

Aristotle, 'History of Animals,' iv. 1, 8: "The glowworm [*πυγολαμπίς*] is both winged and wingless"; and v. 17, 7: "The wingless glowworm has its beginning in a little, hairy, black grub." Both quotations probably refer to *Lampyris noctiluca*, the *mouche lumineuse* of the French.

Pliny, 'Natural History,' xi. 28 [84]: "The glowworm [*lampyris*] emits from its side at night a light like that of fire, bright at the instant it opens its wings, and again extinguished in darkness at the moment it closes them"; and xviii. 26 [66]: "The signal of the ripening of barley and for the sowing of millets is one, the shining of the 'cicindelæ,' so the rustics call them, but the Greeks 'lampyrides.' How boundless is the bounty of Nature!" Both these passages undoubtedly refer to *Lampyris italicica*, the *lucciole* of the modern Italians.

Dr. R. Garnett has also added to our information on this question:—

After reading Sir David Hunter-Blair's letter, I turned to Forcellini under *cicindela*, and found him citing Pliny, lib. xviii. cap. 66: "Luentes vespere per arva cicindelæ; ita appellant rustici stellantes volatus, Græci vero lampyridas." Referring to the passage to ascertain whether Pliny had said anything further, I was rewarded by

EDITORIAL GLEANINGS.

encountering a fine burst of rhetoric, even though the point rather than of utility than of beauty :—

“Extremo autem hoc tempore [that of the first visible ris Pleiades about the second week in May] panici miliique satid credibili benignitate naturæ! Jam Vergilias in cœlo notabiles caterva fecerat; non tamen his contenta, terrestres fecit alias, veluti vociferans, Cui cœlum intuearis, agricola? Ecce tibi inter herbas tuas spargo peculiares stellas, easque vespero et ab opere disjungenti ostendo, ac ne possis præsterire, miraculo solito. Habes ante pedes tuos ecce Vergilias.”

In another place (lib. xi. cap. 84) Pliny speaks of Fireflies under the name *lampyrides*: “Lucent ignium modo noctu, laterum et olunium colore, [candore?] lampyrides, nunc pennarum hiatu refulgentes, nunc vero compressu obumbratæ; non ante matura pabula aut post desecta conspicuæ.” It will have been observed that, although he begins by representing the *cicindela* as winged insects, he ends by describing them as creeping among the grass. It would seem that he confused the firefly with the glowworm, following the authority of Aristotle, who says, as quoted by Pliny's commentators, that some *lampyrides* are winged and others wingless, just like ants.

MR. J. A. HARVIE-BROWN has reprinted, in a complete and convenient form, his series of articles published in the ‘Annals of Scottish Natural History,’ 1902–3, “On the Avifauna of the Outer Hebrides, 1888–1902.” This now constitutes an important booklet on Scottish ornithology, and one that can be catalogued as a separate publication, which is no small boon to a naturalist with congested book-shelves.

A PAPER originally published in the ‘Century Magazine’ (1900) by Mr. Ernest Thompson Seton, on the “National Zoo at Washington,” has just been republished in the last Smithsonian Report (1902). Besides some beautiful illustrations, there are many original remarks in the text. As regards the extinction of any animal life, more especially of the early progenitors of our domestic animals, Mr. Seton remarks that if the early hunters “had succeeded in exterminating them before their stock was domesticated, which might easily have been, for domestication succeeds only after long and persistent effort and, in effect, a remodelling of the wild animal by select breeding, the loss to the world would have been a very serious matter, probably much

more serious than the loss of any invention, because an idea, being born of other ideas, can be lost but temporarily, while the destruction of an organized being is irreparable."

'HULL Museum Publications,' No. 10, contains an account of the discovery of a nearly complete skeleton of *Ichthyosaurus thyreospondylus* from the Kimeridge clay of East Yorkshire. We also read that Mr. George Swailes, of Beverley, has presented the collection of eggs of British breeding birds formed by his brother, the late Mr. Johnson Swailes. "This represents twenty years' collecting by an enthusiast, and includes several interesting and rare specimens, besides being of great local value. It is to be hoped that Mr. George Swailes's excellent example will be followed by others in the district owning collections of this nature, and that the Hull Museum will be looked upon as their proper home."

Two recent records have created no inconsiderable interest among British ornithologists. What is apparently the fourth example of White's Thrush (*Turdus whitei*) recorded for Yorkshire has just been placed in the Halifax Museum, having been shot in Luddenden Dean, near Halifax, on Dec. 18th last. A full and illustrated account has appeared in the 'Halifax Naturalist' for February. A reproduction of this figure will also be found in 'The Naturalist' for March.

The second record relates to the breeding of the Red-necked Phalarope (*Phalaropus hyperboreus*) in Ireland. An account of this interesting occurrence from the pen of Mr. Edward Williams will be found in the 'Irish Naturalist' for last February.

THE 'Concilium Bibliographicum,' to whose excellent work we have previously referred, has just issued its general statement for 1902. The 'Concilium' has surmounted many difficulties, and becomes yearly a still greater boon to zoologists. A conflagration destroyed towards the end of the summer 61,250 printed cards, which were ready for distribution to subscribers. The full value being covered by insurance, no financial loss was incurred; but the number of cards issued in the course of the year was correspondingly reduced. We extract the following paragraph relating to Supplementary Cards:—

"1. Minor notes. Ever since the foundation of the 'Concilium,' two incompatible desiderata have been expressed by various subscribers

in regard to the completeness of our entries. On the one hand, it is claimed that the admission of every little field-note into a bibliography such as ours is an impediment to research, instead of being an aid, and we are urged to suppress references which appear to have no scientific value. On the other hand, other subscribers warn us against such suppressions, and declare that we may as well abandon entirely the attempt to record the observations on the fauna of Europe and America, if minor notes are to be excluded. It has been particularly pointed out that studies on the gradual spread of an insect require references to the most trivial notes. Heretofore the 'Concilium' has wavered between these two tendencies, but in 1902 it was decided to establish a supplemental bibliography, which those desiring complete references can especially order. It is manifestly quite unimportant to a subscriber in Australia or in America whether an insect previously known only in Kent is discovered in the neighbouring county of Sussex, but for the student of the fauna of the southern counties of England it is of great importance. True to its principles, the 'Concilium' now leaves it to each subscriber to decide whether minor notes shall be included or not. It is allowed, moreover, for a subscriber to include the British references alone, or those concerning Australia, or America."

The headquarters is still Zürich-Neumünster.

In 'Nature Notes' for last January, Dr. Herbert Snow contributes a query on "The Influence of Maternal Impressions on the Offspring." The author refers to the old episode narrated in *Genesis* of Jacob's experiments on Laban's cattle; he also writes:—"It is fashionable nowadays to scout the more extraordinary and exceptional manifestations of the principle." The question he propounds is this:—"Is the colouration, &c., of birds, of the lower mammals, even of fishes, affected by the natural environment of the mother, particularly so far as that concerns her visual sense? And, if so, to what extent? For example, how far may the colour of a Grouse be ascribed to the prevailing tints of the heather amid which the bird lives? Are not the stripes of the Tiger in part due to the vision ever present to the maternal eye of tree-trunks, with the sun glinting through them? The white plumage of the Ptarmigan and Snow-Bunting, the tawny yellow of the Lion, the sandy-coloured Snakes of the Egyptian desert, the Sand-Grouse, the dead-leaf-coloured Woodcock—one need not multiply such instances hitherto ascribed to the survival of the fittest in the struggle for existence, and to that alone."

At the meeting of the Zoological Society, held on March 8rd, Mr. Rudolf Martin read a paper on some remains of the Ostrich (*Struthio karatheodoris*), found in the Upper Miocene deposits of Samos. The author stated that the existence of an Ostrich in Samos was of interest because a comparison of the fauna of Samos with that of the Siwalik Hills showed that the latter was younger, and consequently *S. kara-theodoris* was of a greater geological age than *S. asiaticus*. The hypothesis, therefore, that the family of Ostriches had been developed in Southern Eurasia and emigrated at a later period to Africa and Southern Europe could not be sustained. The discovery of *S. kara-theodoris* in Samos showed rather that the specialization took place in Africa, and that the existence of such forms in India and Southern Europe was due to a secondary immigration from Africa. Most probably, however, there was the same relationship between the whole fauna of Samos and that of the Siwalik Hills—i. e. the latter was a transformed and later generation of the former.

We have received 'The Census of the British Land and Freshwater Mollusca,' by Lionel E. Adams, published by authority of the Conchological Society of Great Britain and Ireland, and issued by Dulau & Co. We extract the following pars. from the prefatory remarks:—

"It would be superfluous to point out the value of a complete Census showing the distribution of each species, and it is to be hoped that the present publication of the Census up to date will show conchologists where the gaps are that need filling up, and encourage them to assist in the work. It will be noticed that Scotland is still very poorly explored, but that the Irish lists, on the other hand, are now very fairly full, mainly through the exertions of Messrs. R. Welch and P. H. Grierson. It will be remembered that the last Census, which was published in my 'Collectors' Manual of British Land and Freshwater Shells,' in 1896, was the compilation of Messrs. W. Denison Roebuck and John W. Taylor—a monument of valuable labour. The great merit of the system of authentication is the uniformity of value which it gives to the records, all specimens passing under the eye of the recorder. It does not follow that other records are not equally reliable, but for the sake of uniformity of value it is necessary to confine the tables to such records as have been submitted to and passed by the Society's Referees, otherwise a wide door would have been opened to errors of determination, the avoidance of which is the object aimed at in instituting the authentication system. The areas

adopted are those proposed by Dr. H. C. Watson, and used by him in working out the distribution of the British Flora. It is deemed sufficient to confine the tables to the distribution of species, that of varieties being for many reasons impracticable at the present time.

"Conchologists who can furnish specimens for completing these tables are requested to send them to the Society's Recorder, Mr. Lionel E. Adams, 68, Wolverhampton Road, Stafford."

"THE Significance of the Condition of Young Birds at Birth" is the title of a paper contributed by Mr. W. P. Pycraft to the 'Popular Science Monthly' for last December. As is well known, both systematic ornithologists and philosophical zoologists have based theoretical views on the importance of the development in which young birds are hatched: (1) according to their helplessness or otherwise, and (2) according as they are clothed or otherwise. Mr. Pycraft concludes:—"That too much stress has been laid by systematists on the condition of the young birds at birth is admitted. It is further maintained here that its significance has been misunderstood, and that the facts now brought forward are strong enough, on the one hand, to refute the older views, and, on the other, to justify the theory—firstly, that birds were originally arboreal, and their young nidifugous; secondly, that nidicolous habits and helplessness of young birds are specialized adaptations to an arboreal or gregarious mode of life; and, thirdly, that the young of gallinaceous birds form a link in the chain of the evolution of nidifugous habits. The free finger-tip and arrested development of the outer quill-feathers point to a prior arboreal habit, whilst the accelerated development of the inner quill-feathers indicates an adaptation to enable the young to escape from the enemies surrounding a terrestrial nursery. The third and last stage is represented by the protective coloration, a device which has been almost universally adopted by nidifugous birds, owing to its greater effectiveness."

Our old friend the "Sea-Serpent" is again receiving attention. This time M. Trouessart writes in the 'Revue Scientifique' (March 7th) on "Réapparition du Grand Serpent de mer." He refers to a recent communication made to the Société Zoologique de France by M. Racovitza, naturalist to the "Belgica" Antarctic Expedition, a communication we have not yet seen. M. Trouessart examines the records, and of course states that whatever the unknown animal may be, it is certainly neither a serpent nor reptile of any kind. He inclines to

the opinion that some of the appearances denote a "mammifère," resembling the "Pinnipèdes."

We have elsewhere (*ante*, p. 111) referred to literature relating to the Negrito race of mankind. We are glad to see from 'Le Mois Scientifique' that a new and popular edition of M. de Quatrefages' well-known work is now published :—

"'Les Pygmées, les pygmées des anciens, d'après la science moderne, les négritos, les négrilles, les hottentots et les boschimans,' par A. DE QUATREFAGES, professeur au Muséum, membre de l'Instit. 1 vol. in-16 de 852 pages, avec 81 figures : 2 fr."

ACCOUNTS have been received by the "Friends' Foreign Mission Association," that Bubonic Plague has broken out at Hoshangabad, India. Besides the loss of life and the hindrance to the industrial and other works of this excellent Association, we are informed : " So far we have found no dead Rats, but have plenty of live Squirrels, which is considered a good sign." This relates to the compound where a large number of girl orphans are housed. At Rasulia, however, where the works are situated, and where the outbreak has been greater, numbers of dead Rats and Squirrels are found. It is alleged that fleas carry the contagion.

THE ZOOLOGIST

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ORNITHOLOGICAL NOTES FROM NORFOLK FOR 1902, WITH REFERENCES TO SOME OCCUR- RENCES IN OTHER COUNTIES.

By J. H. GURNEY, F.Z.S.

(PLATE III.)

To every ornithologist the autumn migration which takes place on the east coast of England is an unceasing source of wonder and delight, and, although it has been often watched and described, there is still a good deal more to be learnt about it, especially in regard to what is commonly understood by the term "land-birds."

During 1902 there was a good deal of restless movement, and this became especially manifest in October, when several rarities were evidently *en route* for somewhere, although that "somewhere" was not the British coast, where if they come it is against their will. There was much west wind in 1902 after the 12th October, and with a west wind our immigrants are always more in evidence, because it has been against them whilst crossing the North Sea, and kept them back; consequently they do not reach their destination until after daybreak, if the wind has been strong.

In Norfolk and Suffolk rarely an autumn passes without some species being markedly in the ascendant, and for 1902 the Rooks seem to take the first place, though it is not often that we have

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had so many Ring-Ouzels and Shore-Larks. The passage of Rooks was very strong, and particularly in the neighbourhood of Wells did these birds predominate during the latter part of October. For convenience' sake the returns sent in are tabulated; they show the direction of the flight to have been west, and as usual the Rooks were in most cases going against the wind (see opposite page).

Mr. E. Kay Robinson, who is well situated to observe the incoming rush of migrants, in an article in the 'Daily Graphic' of Nov. 1st, referring to the vicinity of Warham and Wells, writes, under the heading of "A Deluge of Rooks":—"The commoner winter migrants have come to North Norfolk in enormous numbers this week. Every day and all day without cessation flocks of Rooks and Jackdaws drifted across the sky, following the coast-line westwards; and if a similar invasion of Rooks has prevailed all down the east coast, England will see rather too much of the 'farmer's friend' this year." It would be interesting if it could be ascertained how far south the movement extended; it certainly reached Suffolk, for they were noticed at Aldeburgh by Mr. Charles Clarke, but beyond there I have no correspondents.

From there to the mouth of the Humber, if not further, a broad front must have extended, but in North Lincolnshire Mr. Caton Haigh considers that a considerable number of the sable travellers were not Rooks, but Carrion-Crows. We always have an immigration of *Corvidæ* in autumn, when Rooks, Jackdaws, Carrion-Crows, Grey Crows, and perhaps an occasional Raven, mingled together, cross the sea; and it is wonderful how these bands are true to arrive in the third or fourth week in October, but this year the movement was unusually marked.

With regard to the Shore-Larks, they seem to have arrived during the first week in October, and either because they were unmolested, or because they had reached their intended destination, they apparently stayed the winter. Not so the Ring-Ouzels; they are birds of double passage, which neither breed nor winter in East Anglia, save in very exceptional cases.

The Norfolk rarities for the year 1902 are a Scops Owl in April; a Roseate Tern in May and June; a Caspian Tern in July; a Roller, an Aquatic Warbler, and a Barred Warbler in

A MIGRATION OF ROOKS.

			YARMOUTH (Dy's).	HORNUNG (Bird).	CROWDER (Cole).	CLEY (Gunn).	WELLS (Robinson).	NORTH LINCOLNSHIRE (Caton Haigh).
1902.	Wind.							
OCT. 6th ...	E.S.E.						A few.	
" 7th ...	S.E., light....							
" 8th ...	S.E., light....							
" 14th ...	W.							Flocks going S.W.
" 15th ...	W., strong ...							
" 16th ...	N.N.W., strong							
" 18th ...	E.							
" 20th ...	W.							
" 22nd ...	W. to N.							
" 28rd ...	N.N.W., light	A number going W. or S.W.		Continually pass- ing W. or S.W.				Many going W.
" 24th ...	N.W., light ...			Continually pass- ing W. or S.W. in fewer numbers.				All day long go- ing W.
" 29th ...	S.							All day long go- ing W.
NOV. 3rd...	S.W.; veering to S.E.							Continuous flocks going W.
" 18th ...	S.W., light							
								Large flocks go- ing W.
								{ Large flocks go- ing W.
								Flocks going S.

September; Lesser Grey Shrike and Porphyrio in October; Glossy Ibis in November; and Little Bustard in December. An Eagle Owl is also supposed, on the word of an intelligent game-keeper, to have been seen at Trimingham (cf. Pigott, Bull. B. O. Club, xiii. p. 20), where Owls of all kinds have for many years been protected.

The Little Bustard, as usual, was in December. This is at least the fourth which has occurred in Norfolk in December, and throughout the whole of East England it may be said to be nearly always in the winter that this bird appears, and generally in one of the three winter months—November, December, or January. This is rather remarkable, because it is a southern species whose breeding area lies on both sides of the Mediterranean. It must be that our winter Little Bustards are blown from somewhere in Eastern Europe, perhaps the plains of Southern Russia, or even farther east than that. It is not stated by authors that they breed north of lat. 50, but they may be extending their range beyond that to some fresh districts not yet discovered.

I must now refer to a noticeable coincidence which took place on Saturday, Oct. 11th, the day on which the Green-backed Porphyrio was first seen; two other very rare birds had also landed in England, perhaps in its company, viz. a Lesser Grey Shrike in Norfolk, and a Little Bunting in Durham. On the same day a Glossy Ibis was shot in Herefordshire, and another the following day in Sussex. Besides this it was observed that on the two preceding days (Oct. 9th and 10th) a great deal of migration was going on in Norfolk, and especially in Lincolnshire (Mr. Caton Haigh), such well-known over-sea travellers as Harriers (two), Rough-legged Buzzard (one), Ring-Ouzels, Red-wings, Robins, and Lapwings coming particularly under notice. To those who live on the coast, October is a month for being always on the alert, and I was so impressed with the idea that something was coming that morning, that I hurried down to the cliffs after breakfast; though probably it was already too late, as my journal says: "Oct. 10th, no birds coming over, as I had expected." But there were some good birds, only they did not come my way; for a Porphyrio, a Lesser Grey Shrike, and a Little Bunting were perhaps actually crossing the sea! To my mind, the coincidence of these three birds being met with on the

same day, and all near the coast, is very suggestive, and points to the conclusion that the same meteorological conditions brought them all.

The first thing to always consider on the coast is the wind. The wind in Norfolk, and probably on all the eastern seaboard of England, on Oct. 10th was from the west, *in which direction it had not been for fifteen days prior to the 9th.* During the whole of that fortnight it had blown steadily from E. or S.E. My theory is that it was this sudden change of direction which stopped the Lesser Grey Shrike, the Porphyrio, and the Little Bunting, and caused them to halt on their journey, they having already been carried considerably to the west of their proper line of flight by the previously prevailing easterly winds. This, I submit, is a more simple and a more natural way to account for the presence of the Porphyrio than to think it had escaped; but cf. an article on these Porphyrios by Mr. Bird in 'The Naturalist's Quarterly,' ii. p. 52.

The imported Bustards.—There is no good news to give of the Great Bustards turned down in the Brandon district in August, 1900, which, it will be remembered, were reduced by migration and disaster to four when the last "Norfolk Notes" were printed. In March, 1902, Mr. J. S. Elliott wrote that one of them, evidently a cock, had taken up its quarters at Croxton, in Cambridgeshire. Very shortly afterwards I learnt from Prof. Newton that a cock Bustard—probably the same bird—had been caught alive at Oakington, also in Cambridgeshire. Whether the captor had the patriotism to release it I cannot say, but Mr. William Hill, in whose charge all these Bustards originally were, wrote me some time later that a cock had been seen for some time at Swaffham Prior. This cock was considered by Mr. J. L. Bonhote to have been the same Bustard, which, after being loyally respected for nearly six months, was unfortunately shot by a farmer who had not seen the placards which were posted up about it, by order of the Chief Constable, at Bottisham, in Cambridgeshire, on Sept. 25th. On Nov. 5th Mr. William Howlett saw the two last remaining Bustards, a cock and a hen, at Mildenhall, which is nine miles south of Brandon, and they were again seen by others at Barton Mills; these are all that are left of the fifteen originally turned down! In June there was

prospect of breeding, for the hen laid two eggs near Elveden. Mr. Hill allowed her to sit for six weeks, and then took the eggs, which proved to be unincubated. Incubation ought to be about twenty-six days, according to Mr. Evans's table. I learn from my correspondent, Mr. Caton Haigh, that on Dec. 15th a female Great Bustard was shot in Lincolnshire, and another on the 29th, but fortunately neither formed part of the tame birds from Suffolk, where, at the time of closing these notes, Mr. Hill could still report the pair above mentioned as being quite safe. No doubt the Lincolnshire Bustards were migrants which had crossed the sea, only to receive the customary welcome of rare birds on British shores. Two others also appeared in Ireland ('Field').

JANUARY, 1902.

1st.—On the whole this month was fine. Birds pursued their usual peaceful avocations, and a few, I suppose, even had the temerity to think about nesting, for a Great Titmouse laid four eggs in a box put up for nesting purposes at Raveningham.

10th.—Many Lesser Redpolls at Crostwick (M. C. Bird).

14th.—Wild Ducks "treading" at Catfield (Bird).

22nd.—Several Wild Ducks rose in pairs; Water-Rails "screaming" (Bird).

FEBRUARY.

4th.—E.N.E., force 5. After a very cold wind Mr. Bird saw a Magpie at Crostwick.

6th.—The keeper saw two Magpies at Keswick, the first I ever remember having here.

7th.—A pair of Shovelers taken on Breydon Broad (E. Saunders). Stevenson remarks that winter-shot Shovelers are nearly always drakes.

10th.—A great quantity of Pochard Ducks and Coots on Hickling Broad (Bird).

19th.—Six Coots on Breydon (B. Dye).

20th.—A Coot picked up on Cromer lighthouse hills (Barclay), where a few months ago one † was caught at the lighthouse.*

27th.—E.S.E. Dipper at Raynham (C. E. Butler), presumably *Cinclus melanogaster*.

* Only such birds as are marked with a † have been examined by the recorder.

MARCH.

6th.—Grey Shrike at Brunstead (Bird).
 10th.—Lapwing's call first heard (Bird).
 24th.—S.S.W. Rooks and Jackdaws flying N.W. (Bird).
 29th.—E.N.E., force 2,* fog. Rooks and Grey Crows flying N.W. (Bird). Four Garganey Teal—one drake and three ducks.

APRIL.

6th.—S.W. A Scops Eared Owl clearly identified at Sidestrand by Mr. S. J. Hoare; it allowed close inspection, even at a distance of only a few feet, being probably exhausted by a northerly gale with heavy rain, which had prevailed the night before, and which may have blown it from somewhere, though it is not a northern species. When first seen it was a mile and a half from the sea, on a young spruce-fir, tightly drawn up against the stem of the tree; in the evening it was again seen on the same fir, and even when the tree was shaken by the keeper it did not move. He tried to catch it, but it fluttered away, and was not seen again.

19th.—S.E. It is not often that the Common Linnet is detected on its spring migration in Norfolk, though the "passage" is looked for by birdcatchers on the south coast of England; but on this date many were seen by Mr. Bird on Horsey Warren, going south in small companies off and on all day. He remarked but little wind, though at Yarmouth it was registered as "force 2, fog." Again on May 3rd he saw more detachments going in the same direction all day, and it is quite possible that Linnets pass this portion of the coast annually.

20th.—S.S.E., force 4. Two Spoonbills seen on Breydon by Mr. Patterson.

21st.—Young Bearded Tits well feathered (Bird).

26th.—Young Coots already able to fly on Hickling Broad (Bird). Stock-Doves have now resplendent necks.

MAY.

4th.—N., strong. Some beautiful black-breasted Grey Plovers on Breydon muds (G. Jary).

5th.—N.N.W., force 4. Four Wood Sandpipers, sixteen

* I use force 2, force 8, &c., in the same sense that the numbers are published at the Meteorological Office.

Dunlin, ten Whimbrel, three Lesser Tern, and a Garganey Teal reported to Mr. Bird.

6th.—A Black-headed Gull seen to swoop on a very young Moorhen and carry it off, as it was following its parent yesterday across the Bure (W. Nicholson). Weather very cold, with rain.

7th.—*Nidification of the Black-headed Gull.*—I generally try to get in a visit to Scoulton Gallery about this time of the year, though it is not the wonderful sight it used to be. The mere has suffered from scarcity of rain-water and snow to fill it, and so many young have died from the drought—especially in the summer of 1901—that the owner, Mr. Weyland, took the wise precaution of limiting the take of eggs in 1902 to one thousand, and the keeper said he did not think that number had been gathered. This is very different from the palmy days of the settlement, when 15,000 or 20,000 eggs could be taken, and no harm done. As long as I have known it, the breeding-ground has been at the north-west end of the island, or “hearth,” as it is sometimes called, and this portion has no doubt been selected by the Gulls as being the most boggy, and consequently the safest part. It is now little over half an acre in extent, but on this limited superficies the nests are packed thickly. They are rather coarsely put together, made of “gladden” rushes and “bolder” reed, and some smaller materials, and while some of them are quite a bright green, here and there is one which is brown, being made of last year’s reeds. Where the nests are, nothing grows; there are no bushes of sweet-gale, and the herbage is quite sear.

The Black-headed Gulls commence laying in April, and a very interesting sight it is to see the nests with their three handsome eggs, though at neither Scoulton nor Hoveton are you allowed to gather them. Incubation lasts twenty-three days (Evans’s table), and as soon as an egg begins to chip a noisy youngster can be heard proclaiming itself inside, which before very long takes to the water. The nestling can see directly it is hatched; in fact, its eyes are wide open before it has struggled clear of its shell, and equally is the power of swimming born with it. I found it hopeless to try any sort of counting, but I estimated that there must be still at least one thousand Gulls at Scoulton. When a loud shout makes them all rise in the air, the noise of their cries is something quite tumultuous—not one

single Gull is silent; but it is all vocal noise, for the multitude of wings make no sound. If they shut their beaks they would be as noiseless as so many Owls. The first time I visited Scoulton Gallery was in 1860, and that year there were gathered 16,000 eggs, supposed to be the produce of about 7000 Gulls, and I doubt if that number has ever been surpassed since.

The following particulars of the number of eggs taken in the last five years at this important breeding-place have been kindly supplied by Mr. Robert Baldry, agent to the estate:—1898, 5786 eggs; 1899, 6618 eggs; 1900, 7474 eggs; 1901, 7654 eggs; 1902, 900 eggs.

8th.—Mr. Watson, of Letton, saw a Mistle-Thrush actually strike and kill a Jackdaw as it was circling round the tree which contained the Thrush's nest. They are strong birds, and I have often been threatened by them in the most determined manner when near a nest, both male and female dashing round with loud cries. A few days ago my nephew put a Barn-Owl off her eggs, when immediately a pugnacious Mistle-Thrush knocked her quite off the bough on which she had perched, and which was probably near its own nest.

9th.—Young Rooks very backward. Six Norfolk Plovers' nests reported in the 'Field' by N. G.

10th.—*Nidification of the Ringed Plover.*—Thanks to Mr. Cresswell, who has put on a paid watcher, the breeding-place of the Ringed Plover, Common and Lesser Tern, and Lapwing on our north coast is in a more flourishing condition than formerly. No egg-stealers can go there now, but the Grey Crows are credited by Mr. Cresswell with some depredations before they leave to go north, always clearing off the earliest Lapwing's eggs. In the course of a ramble with that gentleman over the principal nesting-ground, we were shown by the watcher nine Ringed Plovers' nests containing eggs, two others with the eggs just hatched off, and several empty nests (maybe "play-holes"), and one with an egg and three young birds. These were only just hatched, the female having doubtless left them at our approach, for the down on them was still wet, and one chick not quite out of the dorsal half of its egg-shell. I noticed how neatly the shell had been divided into two, in effecting which the beak of the parent Plover had probably helped. It seems fairly evident

that directly the nestling is free the old Plover must fly off with both pieces of egg-shell, and drop them at a safe distance where they cannot betray her. The domestic economy of this pretty little shore-bird deserves some study, and I should have liked to renew my visit on a warmer day.

It is clear that the young Ringed Plovers are not hatched quite simultaneously; it is also evident that when hatched their legs develop so rapidly that three or four hours suffice to give them strength enough to run. Most likely they return to the nest at night, and are sheltered under the warmth of the parents' breast; otherwise one hardly sees the necessity for such speedy removal of the egg-shells. Most of the nest-holes here are lined with broken cockle-shells, of which there are plenty in Norfolk, and while three exquisitely spotted eggs point inward, the fourth is generally pointed sideway. I measured many of the nest depressions with a rule; some are larger than others, but the average circumference is fifteen inches, and the average diameter four inches. The above were typical nests, and neither on this nor on any other occasion have I found one constructed of bents of grass, as described and figured by Mr. Kelso.

A photograph by Mr. H. E. Harris, though not taken in Norfolk, so admirably represents a Ringed Plover on her eggs, that I am tempted, with his permission, to reproduce it (Plate III.).

11th.—*Sheld-Duck*.—The increase of that handsome fowl the Sheld-Duck in the Lynn and Hunstanton district is exceedingly satisfactory, and is principally due to their being protected by the King's orders on Dersingham Heath, and on other parts of his shooting, where they breed in considerable numbers. At a distance their white forms on the heather and bracken-clad slopes look almost like sheep, and strangers passing in the train must have often wondered what sort of birds they could be. There is no change whatever in their plumage at the breeding season—no eclipse of beauty as in most drakes—but the colours are duller. They are brightest in January and February, and until the end of March, by which time the beak of the drake has reached its height of brilliancy, and the tubercle is more than twice its former size, and a great deal of courtship goes on.

Every morning and evening, Mr. Cresswell tells me, numbers come down to the Wash, and even in the middle of the day, when



RINGED PLOVER (*Egialitis hiaticula*) ON NEST (cf. p. 180).

there are not usually so many, I counted sixty Sheld-Ducks swimming at the mouth of one large creek. On being disturbed the flocks break up into pairs at this time of the year, the female as often leading the way as the male; and the difference in size when on the wing, as they fly round on their way back to the royal demesnes, is much more marked than might have been expected. Their eggs are generally deposited in rabbit-holes, and if it be on a sandhill, instinct teaches the old duck to fly straight into the hole, in order that no footprints may betray her. I have never dug a nest out, but have been told by those who have, that it is no light job, the eggs being often ten or twelve feet from the entrance of the burrow. When the young are hatched



the old Sheld-Duck brings them down to the sea, from the higher ground at Dersingham, a distance of a mile or two. This would no doubt generally be in July, and I am told by Mr. Cresswell that the poor broods are greatly nonplussed by the wire-netting which has been recently put up in some quantity by the King's orders, and in consequence have been actually seen being led down the village "street" or road to avoid it! At this age they are white, with brown heads and brown spots on the back, and these colours make an odd pattern if a young nestling is laid on its breast, as shown in the above figure, which is half size.

12th.—On different occasions during May a Roseate Tern

was seen at Blakeney Point by Mr. C. A. Hamond, flying with other Terns, but apparently mateless, though Pinchin afterwards said it paired with a Common Tern, and he considers that he found their nest. It was subsequently seen by several other people, and remained about until July 31st, if not longer, and no doubt at all was entertained as to its identity. It is also reported to have been seen at Wells, where a pair are known to have taken up their abode in 1897 (Norf. and Norw. Trans. vi. p. 512); it is possible that *Sterna dougalli* is an annual visitor.

20th.—Scores of Swallows and Martins picked up dead in Oakley Park ('Daily Press'); five † picked up at Keswick; others at Wells.

23rd.—W., strong. Spoonbill on Breydon (Patterson).

JUNE.

1st.—Spoonbill on Breydon (Dye).

5th.—Nuthatch feeding its young on moths.

19th.—Grey Crow at Hickling (Bird).

20th.—A pair of Shovelers on Breydon Broad (Jary).

22nd.—Grey Crow at Northrepps (Shepherd).

JULY.

Mr. Cremer informs me that an adult Gannet was picked up at Runton about the beginning of July—an unusual season for it—and lived a fortnight on his pond. Runton is on the coast.

5th.—Three Snipe's eggs at Keswick, the female on them, the male a few yards off.

24th.—W., strong. A Caspian Tern seen on Breydon Broad by G. Jary, as already announced (Zool. 1902, p. 391). The wind the day before was N.E., day fine, and Mr. Jary remarked a number of Waders about. It was almost exactly at this time last year that a Caspian Tern appeared, possibly the same individual, and that also came with a W. wind following upon N.E.

28th.—Woodcock† picked up at Northrepps.

AUGUST.

18th.—Various species beginning to collect for migration. Large flocks of young Mistle-Thrushes in the turnip-fields, and the usual young Redstarts and Pied Wagtails on lawns; Swallows assembling on houses, and flocks of "brown" Starlings upon

grass-lands, where, it is to be hoped, they found the wireworms which attacked the young wheat in May.

31st.—N. *Flight of Limicola*.—Mr. Charles Clarke, of Aldeburgh, on the Suffolk coast, sends the following note:—Quite at the end of August he heard hundreds of shore-birds passing at night over Aldeburgh, chiefly, judging by their cries, Golden and Grey Plover, Lapwings, Godwits, and Dunlin; they appeared to be going in a westerly direction, and were probably attracted by the town lights.

In Norfolk, on the 31st, hundreds of Curlews, with Bar-tailed Godwits, Turnstones, Whimbrel, Knot, Dunlin, Ringed Plover, and Grey Plover, were seen by Mr. Jary, our watcher, on Breydon Broad, possibly a part of the same flight heard by Mr. Clarke. The following day the pressure of *Limicola* was felt at Blakeney; two Dusky Redshanks,† Curlew Sand-pipers, Little Stints, Knots, Golden Plover, &c. (Pashley), but shore-shooting opened, and the birds soon vanished before the fusillade.

SEPTEMBER.

8th.—The wind at Yarmouth, which is the only Norfolk station whose record is published, was registered as N.E., force 3.

9th.—N.E., force 3. Roller at Rushford, near Thetford (E. Bidwell). An Aquatic Warbler,† shot by Mr. T. E. Gunn; this appears to be an adult. It is rather singular that six years ago he should have met with one at the same place, and almost on the same day.

11th.—S.S.E. A Hobby at Twyford, chasing cockchafers or other beetles among the tops of some oak-trees, where it was watched with much interest by a gentleman who was too good a naturalist to shoot it. There is reason to think that a pair may have bred in Foxley Wood this summer, but they are very rare. In 1866 the late Henry Stevenson could write of the Hobby as “a very regular summer visitant.”

18th.—N., strong. The wind changed to N. yesterday, and became very boisterous in the evening, a fact which may account for the presence of several interesting birds at different points on the coast. The following, I learn from Mr. Pashley, were identified to his satisfaction:—One Barred Warbler, one Little Gull, three if not four Buffon’s Skuas, and several Blue-throated Warblers,

including some fine old birds. The change was probably also accountable for twenty-five Pink-footed Geese on Holkham sand-hills, the earliest arrival known to Mr. A. J. Napier during many years' observation.

20th.—W.N.W., light. [Barred Warbler in North Lincolnshire (Caton Haigh). This species appears to be becoming an annual visitant to the east coast.]

24th.—S.W., light. A Grasshopper-Warbler sent to Mr. Pashley, with a message that there were several others about near the sea, among the shore "bushes," probably a scattered flock.

26th.—N., light. Hoopoe seen.

29th.—E., light. Ring-Ouzel † at Northrepps, close to the house.

30th.—Received a Gannet† which had been found on the beach; did not hear of any Guillemots or Razorbills being washed up.

OCTOBER.

1st.—E., very stormy in the afternoon.

2nd.—E., strong wind; likely to bring migrants.

3rd.—S.S.E., strong. My nephew met with three Wood-cocks, exceedingly scarce birds this year; and the young Ring-Ouzel, before mentioned, allowed us the privilege of watching it on an elder-bush covered with black bunches of berries, which this bird, in company with several Blackbirds, was rapidly thinning, until the tree eventually presented quite a stripped appearance. Afterwards it was detected eating blackberries, and also searching the lawn, for worms no doubt enter into its diet. On this day and the following there seems to have been a great deal of migration going on. A Golden Oriole was seen in a garden at Hadleigh, in Suffolk ('Field'),* and Mr. Bird reported Grey Crows on the move near the coast, and twelve Bewick's Swans, of which two were shot. I also noticed many more Chaffinches and Robins than the ordinary stock would account for, and some Kestrels had come in from the sea. Willow-Warbblers, Chiffchaffs, and Garden Warblers were passing at Cley, and Wheatears and Redwings were on the move (Pashley), as usual, but the stream of Rooks had not begun.

4th.—N.E. Some Shore-Larks seen on the cliff at Over-

* 'Field,' Oct. 18th, 1902.

strand by Lord Hillingdon. About this time several were received alive by Mr. Lowne of Yarmouth, others were reported to Col. Feilden at Wells, and Mr. Pashley afterwards wrote me that for three or four months, dating from the end of September, they were always to be found in the places where one is accustomed to look for them in his neighbourhood.

5th.—S.E. Mr. Gunn received a Ring-Ouzel from Ely, and about this time several appeared at Cley (Pashley), Warham (E. K. Robinson), Palling (Bird), Somerton (Bird), and other places. It is several autumns since we have had so many of these "Michaelmas Blackbirds," well-known visitors though they are; there were also a good many in October, 1899.

6th.—E.S.E. A Grey Shrike seen by Mr. Ernest Gunn flying along the shore, and another the next day.

8th.—S.E., light. Many Ring-Ouzels at Cley (Pashley).

9th.—S.S.E. A Montagu's Harrier† in female plumage, mobbed by nine or ten indignant little birds; it was hovering over Northrepps bracken hills, no doubt for Field-Mice.

11th.—S., light. An immature Lesser Grey Shrike (*Lanius minor*, Gmel.), the third for Norfolk, shot by Mr. G. E. Lodge when Partridge-driving at Docking, which is about five miles from the sea. On the same day a Green-backed Porphyrio put in an appearance on Hickling Broad, also near the sea, where it subsequently fell a victim to the gun, as announced in the 'Field' by Mr. A. H. Smith, who remarked on the presence of other migratory birds.

14th.—W. A Rough-legged Buzzard at Shottesham, circling for some time over a party of shooters, but it wisely kept out of range (E. Knight); however, the keeper picked up a Rabbit it had killed. About the same time Mr. Cole, of Norwich, received one to stuff, with a young chicken, and a message to say that it had killed nearly twenty of the same size before its depredations could be put a stop to. In the course of the autumn I heard of four or five more; one of them, circling over Cromer railway station as late as the 14th of December (H. Cole), seemed, from its proximity to the sea, to have just come in. No doubt the government rewards paid in Norway have already lessened the supply of raptorial birds which used to come to England, joined to the destructive efforts of our gamekeepers.

18th.—E. The wind changed from W. to E., and Mr. E. Kay Robinson observed many birds coming in near Wells, including numbers of Hooded Crows, Rooks, and Jackdaws, as well as Fieldfares, some Snipe, and a few belated House-Martins.

19th.—Fine. Mr. Patterson saw birds coming over from earliest morning, flying high, amongst them Lapwings.

20th.—W. Mr. Patterson saw more migrants coming over.

23rd.—N.N.W., strong. Hundreds of Gulls, chiefly the larger sorts, came on to Somerton and Horsey Broads (Bird); this and the 24th were the days on which the great arrival of Rooks took place. Mr. Bird writes that he has seldom seen such a constant influx as on the 23rd. The wind was light at Norwich, but strong at Yarmouth (force 4), and Spurn Head (force 4).

31st.—A Water-Rail caught in the town at Yarmouth (Patterson).

NOVEMBER.

1st.—I am indebted to Mr. Patterson for the following:—A lightship man who had come ashore from the "Outer Dowsing," which rides well out to sea, informed him that in November, for two or three days, Rooks, Hooded Crows, and Jackdaws swarmed round the lightship, and he believed at one time there were nearly one thousand of them on board, sitting about the bulwarks, cabin-tops, ropes, fittings, &c. The weather was foggy.

3rd.—S.S.E. A good many Water-Rails on the coast, and a fresh arrival of Shore-Larks (Pashley).

19th.—E. Repeated flocks of Jackdaws coming in from the sea at Yarmouth (Patterson), as many as fifty in a bunch.

21st.—No fewer than twenty-three Mistle-Thrushes in my garden on one yew-bush, eating the berries, the remains of which they afterwards voided in a red pulp.

22nd.—A Flamingo shot in the Wash, supposed to have been



one released by the Duke of Bedford. If the plan was adopted, of putting thin rings* of white metal or aluminium on the legs

* The above figure represents an interlocking ring for large birds.

of birds before they are turned down unpinioned, their identity would be always easy to establish.

25th.—Norfolk has shared in the visitation of the Glossy Ibis, a fine male having frequented the River Bure near Ludham for some weeks, only to fall on the 25th to the gun of a passing wherryman. Nearly all the wherries carry guns. The migration seems to have taken place about the second week of October, and the birds to have spread themselves over Sussex (four), Scilly Islands (one), Herefordshire (one), Scotland (two), Ireland (two), after arriving on the south coast; it would have been interesting to trace the line.

DECEMBER.

11th.—S.E. A Little Bustard shot at Caister-by-the-Sea was a male, Mr. Lowne informs me, and had inside it enough carrot- and turnip-tops to weigh five and a half ounces. Four days before another of these winter migrants was shot at the mouth of the Humber ('Naturalist'), which had no doubt come the same journey, but from where is a mystery. The nearest place where any breed, and there only very rarely, is Carentan, near Cherbourg, *fide* Le Mennicier.

13th.—Mr. Cole, of Norwich, received a Fork-tailed Petrel which had been picked up at Brandon, fully forty miles from the sea.

VARIETIES.

Pied varieties of birds are a good deal commoner some years than they are in others, for which there is no known reason; but very few have been heard of in 1902. A cinnamon Starling at North Walsham (W. Lowne), and a cock Redstart † with pale grey wings at Lakenham, are the only ones worth mentioning. The "spangled" Partridge (Zool. 1900, Plate II., p. 97) has not turned up. A Short-eared Owl with more white than usual on the facial disk was shot on Nov. 24th near the sea.

I received through Mr. Reeve a hybrid Linnet × Bullfinch, which had been bred in Norwich by the same successful bird-fancier who sent me one of this same cross in October, 1893. In both instances the Linnet was probably the male parent and the Bullfinch the female (see Norwich Nat. Trans. iv. p. 369), and

both exhibited the Bullfinch's red breast, but had the Linnet's back.

FOOD OF THE QUAIL.

The Rev. M. C. Bird has made an experiment with seeds taken from the crops of two Quails shot last November, mentioned in his notes at the time (Zool. 1902, p. 94). He planted the seeds, and from them reared over fifty plants of the corn-spurrey (*Spergula arvensis*), besides which he found that there were seeds of the white goosefoot, a little wild poppy, about six seeds of the dock, and a labiate or two. This is a very good way of testing what graminivorous birds eat. William Thompson found about 3500 seeds of the pernicious chickweed (*Stellaria media*) in the crop of one Quail killed in Ireland; very few of these would have germinated after being eaten; and this is an instance of what good such birds can do. It is a pity that the attempts to increase the number of Quails in Norfolk by turning down have ended in failure; four hundred released by the King's orders at Sandringham, and two hundred on Holt "lows," soon all disappeared.

ON THE POSITION OCCUPIED BY THE LEGS
OF BIRDS DURING FLIGHT.

By G. E. H. BARRETT-HAMILTON.

DISCUSSIONS dealing with the precise method of the carriage of the legs of birds in flight have, so far as I am aware, only recently appeared in ornithological literature; so that, although no observant field naturalist could feel much doubt upon the question, it can hardly be regarded as altogether decided.

The legs of birds are such important aids to flight, and are so constantly in use when they are on the wing, that it might have been expected that a general paragraph upon the subject would have found a place in some of our text-books; but, beyond the few discussions already alluded to, I have never been fortunate enough to find the matter more than mentioned.

It seems hardly worth while to make an exhaustive search for allusions to the subject. Mr. Ernst Hartert* seems to have been the first to draw attention to it of recent years. The species first critically observed by him were the Common Kites of Calcutta Harbour (*Milvus govinda* and *Haliastur indus*). More recently he had opportunities of studying the flight of the Black Kite on the Rhine, the New-World Vultures of Venezuela, and *Polyborus cheriway* in Curaçao. As a result, Mr. Hartert became convinced that all birds of prey carry their legs stretched out backward, except when they have hold of their prey; and in this respect he classed with them all Waders, Ducks, Herons, Cranes, Storks, Rails, and Game-birds. A similar observation had been recorded by Herr Ziemer † some ten years previously; he had studied the Raptore of Pomerania. Corroboration was afforded by Dr. P. L. Sclater ‡ with regard to certain Gulls and the

* 'Ornithologische Monatsberichte,' ii. (January, 1894), p. 5; 'Journal für Ornithologie' (October, 1889), p. 841; and 'Ibis' (January, 1895), pp. 188-189.

† 'Ornithologische Monatsberichte,' 1898, p. 117.

‡ 'Ibis,' 1895, p. 876.

Egyptian Kites of the Nile, and also by myself* with regard to a large Hawk of uncertain species which I observed in Germany.

In 1898 some important notes were published by Mr. Frank Finn,† in which he remarks that it may be taken "as fairly settled that Waders and Waterfowl, Game-birds, Pigeons, and Birds of Prey, carry their feet behind when in full flight, irrespective of the length of those members." Of the short-legged Parrots and *Picarie*, he gives in detail some interesting observations, and concludes "from these experiences that, supposing the same habit of carrying the feet to run through a family, the forward position of the feet in flight probably characterizes Hoopoes, Woodpeckers, and Barbets, and the backward one certainly obtains among Kingfishers, Rollers, Hornbills, Cuckoos, and Parrots."

Mr. Finn's account of what he saw bears the stamp of reliability. He is particularly careful to describe the difficulties which beset the man who attempts to see the legs—or rather the feet—of even a moderately large bird while in flight; but he took great pains, when unable to satisfy himself out of doors, to let loose a tame bird indoors for purposes of study.

The most important item of Mr. Finn's paper is, I think, his record of the fact that in some species the position of the legs may be varied so as to occupy either the forward or the backward position. Thus, whereas Domestic Fowls, the Crown-pheasant (*Centropus sinensis*), the Koël (*Eudynamis honorata*), and Pigeons in general usually carry their feet forward during their short flights, or, in the case of the latter birds, when starting, they stretch them out behind them when well under way. Lastly, Mr. Finn remarks that since he has "never met with any bird which first extends its feet behind and then draws them up," he considers that when he has once seen a bird with its legs in the backward position his observations are "sufficiently conclusive for the species in question, if not for their allies."

Incited in the first instance by the notice of Mr. Hartert's paper in the 'Ibis,'‡ I have during my travels accumulated a

* 'Ibis,' 1895, p. 186.

† 'Proceedings of the Asiatic Society of Bengal,' March, 1898, pp. 105–107.

‡ 'Ibis,' 1894, pp. 557, 558.

good many notes dealing with various birds, which are perhaps sufficiently interesting to bring together here. These were committed to paper in various distant regions as the incidents came before me. They were finally summarized and collected in South Africa before I had read Mr. Finn's paper. I am therefore pleased to find that I not only corroborate his main contention that the position of the feet may vary, but carry it further, showing that (in the case of some of the Gulls at least) the feet may be moved not only from the anterior to the posterior position, but also in the opposite direction.

It seems to me that in steady continuous flight the tibiae of all birds must necessarily occupy a horizontal position pointing directly backward. The position of the metatarsi will depend upon three conditions—that is to say, its length, the shape, structure, and point of juncture of the leg with the body, and the use which the bird makes of it in catching its prey or otherwise. If the metatarsus is very long, as in the Stilts and Herons, the only possible position for it is the horizontal pointing straight backward, where it is probably of considerable use in assisting the short tail. In numerous species again, as in the Albatrosses, the metatarsus is just long enough to cause the feet to project slightly further backward than the ends of the central rectrices. The birds appear at first sight as if their central tail-feathers were somewhat elongated, and no doubt the rudder-like use in flight, of legs of this particular length, is similar to that of the elongated central tail-feathers, which are so common in many birds of strong or unusual powers of flight, such as the Tropic Birds, Skuas, some Bee-eaters and Goatsuckers, and the males of some Honeysuckers.

In birds with still shorter, but yet comparatively long, metatarsi, the legs are carried in the same position, but the feet lie, according to their length of leg, at some point beneath the rectrices. Where the metatarsi are still shorter the position for the feet is near the vent. As examples of the former condition I may quote the larger Gulls, such as *Larus glaucescens* of Bering's Sea, of the latter many of the Auks. Here again the legs are still of considerable assistance to the flying bird, since they may be separated so as to increase the width of the tail; they may be placed both together at one side, or they may be allowed to partially drop

and catch the wind with an effect possibly somewhat like that of the string of a kite. This position is useful for checking speed, but I have most frequently observed it when the bird is struggling to make headway against a strong wind. On such occasions the legs may be constantly in motion, especially in a young Gull new to flight, and not very strong on the wing.

In birds in which the tarsi are very short it is hardly possible that the legs should be extensively used in flight; hence they are, as a rule, snugly packed away with the feet forward, and lie hidden amongst the feathers of the stomach or lower breast. This is, as I have little doubt, the position amongst the Passeres generally, although it is possible that there may be exceptions. The legs, although warm and packed out of the bird's way, are readily available to be let down as occasion may require.

The shape and structure of the leg influence its position in many birds. Thus those which have short legs and large feet, such as *Fuligula*, in which the legs are placed very far back on the body, or those which have very stiff legs like the Grebes, are naturally compelled to carry them in the horizontal backward-pointing position, with the feet lying alongside the short tail.

The Crows and Birds of Prey possess considerable powers of using their feet as hands or grasping organs, when on the wing; yet their method of bearing them when in flight is essentially different.* The ordinary position of the leg in flight is in the case of the former birds the forward, in the latter the backward pointing. But there is considerable power of varying the position, and my friend Mr. J. L. Bonhote informs me that the Merlin carries its legs forward when in pursuit of its prey.

I think that probably the most interesting part of my observations is the fact that in some species the position of the leg may be varied according to the requirements of the moment. Thus the Kittiwake is a strongly flying bird, which habitually makes considerable use of its legs in strong and energetic flights.

* I have seen a Rook using both beak and feet to assist in the manipulation of something which it carried while on the wing; but, whereas such an operation has no effect upon the buoyancy of a Kite, the Rook invariably dropped during the operation, and was forced to discontinue it at intervals in order to maintain its altitude above the ground.

When travelling easily, however, it may tuck its feet comfortably forward under its feathers. It was at St. Paul's Island, one of the Pribiloffs, on the 21st of September, 1896, that I first had my attention directed to this point. I was attracted by the sight of a Black-legged Kittiwake (*Rissa tridactylites pollicaris*, Stejneger) flying with one leg hanging downward as if broken, the other being concealed amidst the feathers. On looking closer at several individuals which were flying about their nests, I found that the legs may be carried in this species either bent forward from the tibio-metatarsal joint, in which case the feet lie at about the posterior end of the sternum, or they may be stretched out straight backward, as in the larger *Larus glaucescens*, only they do not reach so far as in that species, and the feet lie slightly below the base of the tail. The first position appears to be that of greatest ease for the bird. Both legs and feet are then completely hidden under the plumage, and their position can only be ascertained by an observer who is near enough to note the crinkle among the surface feathers at the place where each foot lies concealed. The minute, however, the bird finds it necessary to do any real work—as against the wind, in flying—it calls both legs to its assistance by removing them from amongst the feathers. Every intermediate position is used, and each foot works independently of the other; thus one leg may be packed away, and the other hanging down straight as if broken; or one may be directed horizontally backward while the other hangs down; or again, both may hang downward as when just before alighting.

The above observation was only possible in an extraordinarily favourable locality, where, as I crouched in close proximity to their nests, the birds flew around quite near me. Later the thought struck me that in my observation might be found the explanation of the comparatively numerous Gulls which may be observed in British waters, in localities where they are seldom shot, with a leg hanging downwards as if disabled. It is seldom easy to observe these Gulls closely, and my home is not at the seaside. It was not then until July, 1899, that an invitation to join my friend Mr. Henry Evans on a cruise in his steam-yacht 'Aster' gave me the chance for which I wished. I was then able to definitely ascertain, that what I had observed in the Kittiwakes

wake occurs also in the Herring-Gull. In the presence of Mr. Evans I was able to observe Herring-Gulls flying without visible legs, or with only a ruffle on the feathers to indicate where the legs were hidden. Lastly, Mr. Evans was so fortunate as to observe a bird actually tuck up its leg while he looked at it.

Nothing could be more striking in illustration of the great and constant assistance which the legs of birds afford to their wings in flight. It is almost as if, to some birds, the legs are nearly more important as organs of flight than of progression on land.

No more interesting birds exist than the Kites for the purpose of observations of the present kind. Where food is abundant, as in Cairo or Bombay, or in many harbours, as those of Japan, their graceful evolutions may be watched for hours. Kites have considerable power of movement of their legs while on the wing. They can pick up, carry, and even eat their food while in the air. On the other hand, the legs are not long enough to oust the long forked tail in its varied functions, since they reach only to about the base of the rectrices when pointing backward. After watching Kites on numerous occasions I at length came to the conclusion that the posterior position of the legs is for them the normal one. I thus agree with other writers; but I was so long in coming to this decision, and I made so many contradictory observations, that I feel sure that Kites, like Gulls, can use either the backward or the forward position.

The tail of a flying Kite is constantly undergoing slight modifications or alterations of position. Besides changes in the amount of expansion, it is constantly changing its plane, now in one direction and now in another, evidently with a rudder-like effect or action. The need of a rudder of some kind seems to find its satisfaction in length of tail* or of leg, but it is curious that so many of the most powerful and persistent fliers should possess very short legs, which must be quite useless for purposes of flight. In these, however, I think, it will be found that there

* In mammals a long tail may be used as a rudder. The late Sir Samuel Baker remarks that the Cheetah (*Felis jubata*) is assisted by its tail when turning sharply at full speed, although he does not state exactly how (cf. 'Wild Beasts and their Ways,' p. 168), and I have personally observed a similar function in the (in life) beautiful tail of the South African Ground Squirrel (*Xerus capensis*).

is nearly always a long or frequently a forked tail, the forks of which are similar in their action to the long legs of other species. But mere soarers and gliders, of however powerful and enduring flight, such as the *Cathartidæ* or *Vulturidæ*, should be clearly distinguished from birds which twist and turn frequently, such as the Swallow-tailed Kite (*Elanoïdes*), or the *Hirundinidæ* or the *Cypselidæ*. In the former there is no need for a forked tail, a feature which is so frequent amongst the latter. Further, it must be remembered that even amongst such constant fliers as the Swallows, the power of flight is by no means of universally equal strength amongst all the forms. The long wings, and deeply forked tail, of our own Swallow represent an immense gulf, as regards powers of flight, between it and such comparatively feeble fliers as the South African Cliff Swallow (*Petrochelidon spilodera*), in which both wings and tail are short, and the tail square.

I have been at the pains to bring together in a list, the majority of swiftly or erratically flying families in which the tail is forked, or the legs long, excluding on purpose such merely powerful and sustained fliers as the Herons, Storks, Cranes, Vultures, Condors, and the like. An examination of these shows that, while the *Fregatidæ* have all a forked tail, it is only in certain representatives of other families that the fork is present, as in *Oceanodroma* amongst the Petrels; in *Milvus*, *Lophoictinia*, and *Elanoïdes* amongst the *Falconidæ*; in *Glareola*, in *Xema*, *Hydrochelidon*, *Nænia*, and *Rhynchos* amongst the Gulls and Terns and their allies; in *Dicrocercus* amongst the Bee-eaters; and in certain of the *Caprimulgidæ*, *Cypselidæ*, *Hirundinidæ*, and Humming-birds. In some forms, on the other hand, the same purpose seems to have been effected by the medium of two or more elongated tail-feathers; such are the *Phaëthontidæ*, *Stercorarius*, *Merops*, and *Meropogon*, and the males of some of the *Nectariniidæ*. Amongst those which perform great feats of flight, yet have no fork, the *Diomedеinæ*, *Oceanitinæ*, *Procellariinæ*, and *Pelecanoidinæ* (except *Oceanodroma*) are remarkable, but in this case the majority possess long legs, and *Phoebetria* a long tail. Most remarkable of all is, I think, the entire absence of a forked tail amongst groups such as the *Accipitrinæ* and *Falconinæ*, in which the powers of flight have been so strongly developed.

In the following list will be found the forms in which I have personally observed the method of the carriage of the legs. To make it the more complete I have added the species or groups which have fallen under the observation of other naturalists.

LEGS CARRIED POINTING BACKWARD IN :—

PODICIPEDIDÆ.

Colymbus septentrionalis.

Podicipes cristatus (legs well visible behind tail) (E. Hartert, *in lit.*).

DIOMEDÆ.

Diomedia albatrus (reach behind tail).

D. nigripes (reach behind tail).

OCEANITÆ OR PROCCELLARIINÆ.

Some species of Storm-Petrel unknown, observed by me in the North Atlantic, must be added to this category.*

PROCCELLARIINÆ.

Fulmarus glupischa.

Macquaqua-like Petrel of Cape Seas.

PHAËTHONIDÆ.

Phaëthon sp. ? of China Seas (feet conspicuously borne near base of tail).

SULIDÆ.

Sula bassana.

S. capensis (feet carried near base of tail).

S. leucogaster.

PHALACROCORACIDÆ.

Phalacrocorax urile.

P. perspicillatus.

All species (E. Hartert).

ARDEIDÆ.

All species (E. Hartert). Legs and feet project behind tail.

Ardetta (S. African species).

Nycticorax (S. African species).

N. griseus (E. Hartert, *in lit.*).

Ardea bubulcus.

A. cinerea.

A. purpurea (E. Hartert, *in lit.*).

A. goliath.

A. melanocephala.

A. garzetta (E. Hartert, *in lit.*).

Herodias lucidus.

H. brachyrhynchus.

SCOPIDÆ.

Scopus umbretta (feet under tail).

CICONIIDÆ.

Ciconia alba (feet behind tail).

C. nigra (E. Hartert, *in lit.*)

Pseudotantalus ibis (feet behind tail).

Comatulus eremita (E. Hartert, *in lit.*).

IBIDINÆ.

Ibis aethiopica (feet behind tail).

PLATALEIDÆ.

Platalea leucorodia (*fide* J. H. Gurney, 'Zoologist,' March, 1896, p. 112).

ANATINÆ.

All species (E. Hartert).

Fuligula cristata (E. Hartert, *in lit.*).

Spatula clypeata (E. Hartert, *in lit.*).

Anas boschas, and a S. African Duck, probably *A. undulata*.

* The smaller Petrels are well known to make a most active use of their legs while on the wing, often dangling them beneath them, or seeming to walk on the water like an Albatross. See Mr. Ogilvie Grant's account of the Frigate Petrel, *Pelagodroma marina*; "On Birds observed at the Salvage Islands," 'Ibis,' January, 1896, p. 51.

Chenalopex egyptiaca.

ANSERINÆ.

*Branta canadensis hutchinsii.**Plectropterus* sp.*Aner albifrons gambeli.*

Tame Geese.

SERPENTARIIDÆ.

Serpentarius secretarius (legs and feet project behind tail).

VULTURIDÆ.

Species unidentified of Bombay and S. Africa.

POLYBORINÆ.

Polyborus cheriway (E. Hartert).

ACCIPITERINÆ.

Spilornis cheela (E. C. Stuart Baker, quoted by E. Hartert).

AQUILINÆ.

Haliaëetus albicilla (E. C. Stuart Baker, quoted by E. Hartert).*Polioæetus plumbeus* (E. C. Stuart Baker, quoted by E. Hartert).

BUTEONINÆ.

Buteo buteo (E. Hartert, in lit.).*B. desertorum.**Haliastur indus* (E. Hartert).*Milvus govinda* (E. Hartert).*M. migrans* (E. Hartert).*M. melanotis* and other species (feet do not reach base of tail).*Elanus caeruleus.*

FALCONINÆ.

Tinamunculus amurensis (E. C. Stuart Baker, quoted by E. Hartert).*T. conchris* (E. Hartert, in lit.).*T. tinamunculus* (E. Hartert, in lit.).*Esalon regulus* (probably variable, since Mr. J. L. Bonhote informs me that the legs are carried forwards when in pursuit).

PANDIONIDÆ.

Pandion haliaëetus (legs under tail).

" GAME-BIRDS."

All species (E. Hartert).

NUMIDINÆ.

Numida coronata.

PHASIANINÆ.

Phasianus colchicus (E. Hartert and the Hon. W. Rothschild, in lit.).*P. torquatus* (fide F. Finn, also E. Hartert and Hon. W. Rothschild, in lit.).

Domestic Fowl (fide F. Finn).

TETRAONINÆ.

Perdix perdix (E. Hartert and Hon. W. Rothschild, in lit.).*Tetrao urogallus* (E. Hartert).

RALLIDÆ.

All species (E. Hartert).

*Gallinula chloropus.**Fulica atra.**F. cristata.*

GRUIDÆ.

Grus sp. of S. Africa.

OTIDIIDÆ.

*Trachelotis cærulescens.**T. barovii* (legs carried beneath tail, but when rising may be bent forward so as to make it seem possible that they might be carried in the forward position).*Eupodotis kori.**Compsotis leucopelta.*

"WADERS."

All species (E. Hartert, in lit.).

CHARADRIINÆ.

*Ægialitis pecuaria.**Oxyechus tricolor.**Vanellus cristatus* (feet reach behind tail).*Stephanibis coronatus* (feet reach behind tail).*Hoplopterus speciosus* (feet reach behind tail).*Himantopus candidus.*

TRINGINÆ.

*Totanus calidris.**T. ochropus* (E. Hartert, in lit.).*T. stagnatilis.**Pavoncella pugnax* (feet project behind tail).*Numenius arquata.*

GLAREOLIDÆ.

Glareola pratincola (E. Hartert,
in lit.).

Cursorius rufus (feet project behind tail).

CEDICNEMIDÆ.

Cedicnemus capensis (feet project behind tail).

STERCORARIIDÆ.

Stercorarius parasiticus.

LARINIDÆ.

Rissa tridactylites pollicaris (position variable, see above).

R. brevirostris.

Larus glaucescens.

L. argentatus.

L. marinus.

L. schistisagus.

L. occidentalis.

L. ridibundus.

L. melanporus.

Legs and feet generally reach to about base of tail.

STERNINIDÆ.

Probably all species.

ALCIDIDÆ.

Lunda cirrhata.

Fratercula arctica.

F. corniculata.

Cephus columba.

C. carbo.

C. snowi.

Uria troile.

U. arra.

The family generally (F. Finn).

COLUMBIDÆ.

Columba palumbus.*

C. domesticus; feet visible near base of tail (observation confirmed by E. Hartert and Miss E. Theys).

CULOCIDÆ.

Eudynamis honorata (F. Finn).

PSITTACIDÆ.

Palaeornis torquatus (F. Finn).

* Until I had read Mr. Finn's paper I had placed the Pigeons amongst those birds which carry the feet forwards, as I had undoubtedly observed them in that position. Adopting this naturalist's suggestion that the legs are changed from the forward to the backward position when in full flight, I carefully watched a flock of tame Pigeons, and am happy to be able to corroborate his remarks. After I had written my own paper, I obtained leave to submit it to Mr. E. Hartert, the originator of the discussion. Mr. Hartert, although at first sceptical, has now also satisfied himself of the truth of Mr. Finn's observations, and has obtained independent corroboration from a sharp-sighted friend of his, Miss E. Theys. I have also to thank Mr. Hartert for several suggestions, for the discovery of one or two slips, for a good many additions to my list of species observed in flight, and for his kindness in reading my paper while in manuscript.

I was particularly pleased with the knowledge and accuracy shown by Japanese artists when depicting flying birds. The temple decorators of old Japan seem to have held very sound views on this subject—far sounder than many of our modern artists, taxidermists, and even (occasionally) our museums. In the Sighasi Otanu Temple at Kyoto small carved birds, said to have been finished some three hundred years ago, are represented in flight with legs half doubled up, the feet forward; crested water birds of some species with which I am not acquainted and the imaginary "Phoenix Bird" carry the legs stretched out stiffly behind them, with the toes folded and forming a knob at the end of the leg.

The drawing of a white-fronted Goose in the Chionin Monastery, rebuilt in 1680, at Kyoto, and attributed (as far as I could make out the name from

ALCEDINIDÆ.

Ceryle rudis (F. Finn).*Alcedo ispida* (F. Finn).*Halcyon smyrnensis* (F. Finn).*Dacelo gigas* (F. Finn).

BUCEBOTIDÆ.

Anthracoboceros sp. (F. Finn),

LEGS CARRIED BENT FORWARD IN :—

FALCONINIDÆ.

Æsalon regulus (legs carried forward in pursuit, J. L. Bon-hote).

MOTACILLIDÆ.

Macronyx capensis.

STURNIDÆ.

Spreo bicolor.

TURDIDÆ.

Turdus merulus (fide J. L. Bon-hote).

HIRUNDINIDÆ.

Ptyonoprogne fuligula.

CORVIDÆ.

Corvus frugilegus.*C. splendens*.*C. beringianus*.*C. corax*.*C. capensis*.

UPUPIDÆ.

Upupa epops (F. Finn).

CYPSELINIDÆ.

Cypselus caffer.

CAPITONIDÆ.

Theriecoryx zeylonicus (fide F. Finn).

PICIDÆ.

Brachypternus aurantius (F. Finn).

my guides) to a well-known artist named Kanomotonogo, seemed to me to be remarkably good. The bird is about to alight, and is in the act of extending its legs slightly forward before doing so.

In the "Bamboo Room" of the Hongali Temple, also at Kyoto, and said to be three hundred years old, the legs of the Japanese Sparrow are portrayed in flight as bent partially forward. In the "Wild Goose Room" of the same temple some excellent examples of Geese are drawn in various characteristic positions, as with legs trailing when about to alight, or stretching backward, but below the horizontal, when arising from the ground. Evidently the Japanese artists clearly recognized the different carriage in flight of the legs of such totally distinct birds as a Goose and a Sparrow, although in the case of the imaginary Phoenix Bird there might well be room for a variety of opinions.

NOTES AND QUERIES.

MAMMALIA.

The Occurrence of *Mus sylvaticus wintoni*, Barr.-Ham., at Tostock, Suffolk.—It has long been known that examples of a species of the genus *Mus* differing little except in size from the common Long-tailed Field-Mouse (*Mus sylvaticus*) have from time to time been met with, and till recently they have generally been regarded as individuals of a large race of this species. So recently as December, 1894, Mr. W. E. de Winton, in the pages of this Journal (Zool. 1894, pp. 441–5), gave a minute description of this variety, which he considered as identical with *M. flavicollis* of Melchior;* but the then editor of 'The Zoologist,' in a footnote to the article, expressed an opinion that the skins shown to him by Mr. de Winton, as well as those described by Melchior, were "nothing but a large variety of *M. sylvaticus*," but that Mr. de Winton did well to bring the subject once more under the notice of naturalists. And so the matter remained till March, 1900, when Mr. Barrett-Hamilton contributed a valuable paper to the 'Proceedings of the Zoological Society of London,' "On Geographical and Individual Variation in *Mus sylvaticus* and its Allies,"† in which, after a most exhaustive examination of a large series of Long-tailed Field-Mice from many localities, "almost conterminous with the limits of the Palæarctic Region," he arrived at the conclusion, and I think justly, that this large variety differs so essentially from *M. sylvaticus typicus* as to be worthy of the rank of a subspecies, and he conferred upon it the name of *Mus sylvaticus wintoni*, in recognition of Mr. de Winton, who first pointed out its subspecific value. In Mr. Barrett-Hamilton's survey of the large series of this widely distributed species, numbering 580 examples, he recognizes no fewer than nineteen sub-species or phases, all of which can be identified as modifications of the original type as known to Linnaeus. I am indebted to the kindness of Mr. G. T. Rose for the opportunity of examining one of these interesting animals, which was sent to him by the Rev. J. G. Tuck, of Tostock Rectory, near Bury St. Edmunds, Suffolk, where it was killed

* 'Den danske Stats og Norges Pattedyr,' p. 99, pl. 1 (1884).

† P. Z. S. (1900), pp. 887–428, pl. xxv.

on the 14th March; and, although it has been met with in that county on a previous occasion, I am induced to trouble you with these particulars, hoping that it may be detected and recorded from other localities, as it seems probable that it will prove to be widely distributed in this country if looked for. Mr. Barrett-Hamilton mentions that he has seen specimens from Herefordshire, Northamptonshire, Sussex, Suffolk, and Northumberland.

Except in size and superior length of tail this animal much resembles *M. sylvaticus*; the adult is a very handsome animal, a beautiful chestnut colour on the sides, the hairs of the back tipped with grey giving it a slightly darker tinge on that region, and the throat and lower parts very pale grey, almost white, the demarcation between the two colours being abrupt and striking. On the white breast is a patch of orange colour extending along the forearms, and forming a complete collar; this colouration also extends a short distance towards the throat and in the reverse direction along the sternum, forming a conspicuous cross-shaped breast-plate. The whiskers are long, eyes large and bright, and the ears large. Mr. de Winton mentions that among other structural peculiarities the tail is made up of thirty vertebræ, whereas in *M. sylvaticus* he has never found more than twenty-seven.

The measurements of the Tostock specimen, given in millimetres, were as follows. In the second column are the corresponding measurements of Mr. de Winton's male specimen, and in the third those of a typical *M. sylvaticus*.

	<i>M. wintoni</i> , adult ♂.	<i>M. sylvaticus</i> , adult ♂.
Head and body.....	105	110
Head	80	—
Ears.....	18	18
Tail	120	112
Hind foot.....	24	24

—THOMAS SOUTHWELL (Norwich).

A V E S.

Great Grey Shrike in West Suffolk.—About Feb. 20th a very perfect specimen of the Great Grey Shrike (*Lanius excubitor*) was shot at Great Barton, and sent to Bury for preservation. It is a fine old male of the form known as Pallas's Grey Shrike, with one white wing-spot, the back a delicate pearl-grey, the rump nearly white, and no trace of

any markings on the under parts. This is, I believe, the first occurrence of this species in West Suffolk since November, 1899.—JULIAN G. TUOK (Tostock Rectory, Bury St. Edmunds).

The Status of the Goldfinch (*Carduelis elegans*) in Britain (cf. *ante*, pp. 28, 70, and 104).

North Oxfordshire.—The Goldfinch (as a resident species at all events) is more common than it was twenty or five-and-twenty years ago. It is now fairly common as a breeding species, but its numbers are liable to be temporarily reduced by severe winters—e. g. 1890-1 and the early part of 1895, when the resident race appeared to be nearly exterminated. In the spring of 1896 (I was abroad in the spring of 1895) I could see none about this village until April, although there were a fair number about in the latter part of that month.

West Carnarvonshire (Lleyn).—Fairly common, and, I believe, resident. I have often seen it in the breeding season, and have found the nest; but I have only once been in Lleyn in the winter, when I saw a charm of six Goldfinches one day early in February, 1903.

West Merioneth.—I have spent about three weeks in this district in May and June in the years 1900, 1901, and 1902, but I cannot recollect seeing a Goldfinch during those periods; but a good many years ago—on the 15th October, 1884—I saw about a dozen near the sea at Llwyngwril, and I am told that the Goldfinch has been known to breed near there.—O. V. APLIN (Bloxham, Oxon).

Arrival of the House-Martin.—I saw a single House-Martin (*Chelidon urbica*) flying about close to the sea at Mundesley, Norfolk, on the 27th of last month (March).—BERNARD B. RIVIERE (Flaxley, 82, Finchley Road, N.W.).

Hen-Harriers in Dorset.—While staying in Dorsetshire in January last I came across a pair of Hen-Harriers (*Circus cyaneus*). When first seen they were too far off to identify, and I thought possibly they might be a pair of Montagu's Harriers wintering here, as they breed more frequently in the county than the Hen-Harrier, and one has been obtained as late in the year as Nov. 26th (cf. 'Birds of Dorset,' by the late J. C. Mansel Pleydell). However, one day I disturbed the male bird, and, happening to be hidden under a bank when he returned, had a good opportunity of observing the greater stoutness of build as he sailed round and about, no doubt trying to see if the intruder had departed. Two or three winters ago a neighbouring keeper told me that a pair of Harriers were continually worrying the Teal that frequented a pond on his beat; he called them Montagu's Harriers,

which he had seen about in the summer, but no doubt they were of this species, possibly even the same pair.—ARTHUR BANKS.

Early Nesting of the Shag (*Phalacrocorax graculus*).—In ‘The Zoologist’ for 1890 (p. 388) I inserted a note on the number of eggs laid by the Shag. Up to that date the number in my experience had never exceeded three. Mr. Ussher, in an interesting note on the Shag in Ireland in reply to mine, stated that he had often seen Shags’ nests containing four eggs. Incidentally he gave the date of the birds’ laying, a much earlier date than that usually given in ornithological text-books. This date was the 15th April, and that for the young 14th May (not 11th, as quoted in Saunders’s ‘Manual’). I had no opportunity of further experience of the subject till 1895, when I paid a short visit to the Shetlands. In ‘The Zoologist’ for 1895 (p. 848) will be found another note on the nesting of the Shag. On the 6th of May, on the island of Ross, several nests already contained young, and I estimated that some at least of the birds must lay as early as the end of March. This year I paid a visit to a small breeding colony on the south-east coast of Scotland on the 29th of March. The colony numbers six pairs, which nest on ledges of a steep cliff overhanging the sea. Most of the nests, however, can be easily seen with a glass from further along the coast. I was somewhat surprised to find laying already almost completed. One nest contained three eggs; one nest contained two eggs; two nests contained one egg each; one nest ready but empty; one could not be seen into, but the bird stayed on as if sitting. This is much the earliest date that I have heard of, but possibly some of the correspondents of ‘The Zoologist’ may have known of others as early, as it cannot, I think, be really exceptional, despite the very much too late date usually accepted.—HAROLD RAEURN (Edinburgh).

The Rock-Dove (*Columba livia*) in Somerset.—With reference to the note on this subject (*ante*, p. 108), may I point out that the Rev. Murray A. Mathew, when he published his ‘Revised List of the Birds of Somersetshire,’ did not believe in the existence of the genuine *wild Rock-Dove* as a Somerset breeding species; and he only included the name of the species between brackets among those birds which “are of doubtful authority for their occurrence”?—O. V. APLIN (Bloxham, Oxon).

Great Bustard in Ireland.—Two large birds were observed frequenting some fields near Thurles, Co. Tipperary, during the month of December, 1902. On the 20th one fell to the gun of a farmer’s son,

who thought it was a Wild Goose ; it was sent to us for identification, and proved to be a female Great Bustard in excellent plumage. Its stomach contained turnip-tops. This, we believe, is the first record of this species in Ireland. The gentleman who turned down the Great Bustards in Norfolk has carefully examined the specimen, but cannot identify it as one of his birds.—WILLIAMS & SON (2, Dame Street, Dublin).

Stone Curlew in Merioneth.—A specimen of the Stone Curlew (*Edicnemus scolopax*) was shot at Towyn on Jan. 6th by Mr. D. W. Kirkley, who informs me that when first noticed it was feeding in a turnip-field. It whistled as it flew swiftly by, and was shot on the wing. The wind was south-east, and there was a frost that morning. This is the first example of the bird recorded in North Wales.—H. F. FORREST (Bayston Hill, Shrewsbury).

Purple Sandpiper (*Tringa striata*) in Anglesey.—As this bird appears to be somewhat rare in Anglesey, it may be worth recording that on March 18th I saw a fine specimen on Dinas Frefriw, a rocky promontory south of Aberffraw Bay. It allowed me a near approach and time for inspection before taking flight, as is often the case with this species.—S. G. CUMMINES (King's Buildings, Chester).

Protection of Red-throated Diver at its Irish Breeding-place.—Mr. W. C. Wright's "Ornithological Notes from Co. Donegal" (ante, p. 89) aroused my mingled feelings of indignation and regret when I read his sad account of the continued persecution of the Red-throated Divers (*Colymbus septentrionalis*) at the only breeding-place in Ireland at present known to naturalists—two clutches taken from the *one* pair of birds, and the third, of which Mr. Wright saw the product ; one bird, probably escaping the hands of the depredator, owing to the vigilance of the keepers preventing the eggs being taken by the boatman, who related to Mr. Wright his glorious exploit of swimming out to the island on which the nest was situated and taking the eggs. It is really a scandalous state of things that dealers, egg-collectors, and self-dubbed naturalists, should hasten the extermination of our rarer birds by offering such large bribes to poor persons as tempt them to harry the nests of birds even in preserved districts ; for instance, the fact related by Mr. Wright of the old woman who was paid thirty shillings for the clutch of four Chough's eggs. However, I am happy to say that the facts stated by Mr. Wright have so aroused the indignation of Mr. Herdman, the owner of the shooting and lakes, that he has issued strict orders to his keepers for the preservation of the Divers, and to prevent the visits of these predatory gentlemen to the district, who if

met on the "prowl" will receive the warm welcome of a prosecution for trespass and law-breaking.—ROBERT WARREN (Moy View, Ballina).

Birds killed by Ticks.—In reference to the note on the above subject by Mr. W. S. M. D'Urban (*ante*, p. 108), I may state the following experience. On April 19th, 1884, during a voyage to Calcutta, and while in the Red Sea—one day out from the Suez Canal, I shot on the deck either a White Wagtail (*Motacilla alba*) or a very nearly allied species. The Wagtail had several brownish-grey Ticks adhering to its head in the neighbourhood of the eyes, but the eyes themselves were uninjured. The bird was obviously ill, much exhausted, and in wretched plumage. I did not preserve its skin, which I now regret.—J. E. H. KELSO (Chesterfield, Elm Grove, Southsea).

The Birds and other Animals of Thetford Warren.—An article on Thetford Warren (*ante*, p. 100) in some particulars seems so unfair to my friend Mr. W. Dalziel Mackenzie, the owner of this warren and the adjoining property, that I cannot help asking you to kindly insert this letter. At pages 102–8 Mr. Clarke remarks: "A somewhat similar attempt was made in 1885 to acclimatize Black Grouse, but the half-dozen turned out in the autumn did not survive the winter." This statement is inaccurate, as not only in 1885, but for many years after, Mr. Mackenzie spared no expense in turning down Black Game, "not half a dozen in the autumn," but upwards of twenty in a single season; not only did they "survive the winter," but many winters, and several nests were hatched off, although it seems doubtful if any young arrived at maturity. When covert-shooting on this estate I have often seen half a dozen in the day. In May, 1896, I flushed thirteen hens in one small flock. During the last few years the numbers have decreased in spite of fresh birds having been turned down almost every season (I believe the last in 1900). After this very exhaustive experiment it seems useless to continue.

On p. 108 your contributor remarks: "Lapwings have decreased in numbers of late years, chiefly owing to those who consider their eggs a delicacy, and so make collecting profitable." This statement might be taken to imply that my friend allows the eggs to be collected. This is not the case. No Plovers' eggs have been taken on the Thetford property for many years with the sanction or knowledge of the owner, and any keeper found molesting these birds would be instantly dismissed. No doubt the Green Plover has decreased in numbers during the last few years, but not from this cause. The Norfolk Plover has increased, thanks to efficient protection during the breeding season; in fact, every interesting bird can find a haven of refuge on

this property. Neither Hawks nor Owls are destroyed, and that indiscriminate engine of torture and destruction, the "pole-trap," is unknown. Would that we could say the same of all Norfolk and Suffolk! It may interest your contributor to learn that Roe-Deer have been most successfully introduced into the Warren Woods; they have bred freely, and are well on the increase.—HEATLEY NOBLE.

The following are extracts from a letter received by Mr. Heatley Noble from the owner of Thetford Warren:—

"A few Black Game were turned out in 1885; a much larger number were imported in 1886-87, some of which were liberated; others kept in a pen, where they did well. A fine cock was inadvertently shot by the tenant of Croxton Hall Farm (Mr. Cole, jun.). Some of the Black Game turned out remained at Two Mile Bottom, others crossed the river to the Warren in 1888 and subsequent years. The following were accidentally shot: in 1890 one cock and two hens, in 1894 one hen, in 1895 two more hens. About one hundred were turned down one year later, but most of these (their wings being cut) were killed by Foxes during a snowstorm immediately after arrival. Almost every year from 1897 to 1900-1901 a number were imported from Norway, thirty in the last season. No doubt a few were killed on the neighbouring estates, although very few died from natural causes. Broods hatched off regularly, but seemed to disappear in some unaccountable manner. A clergyman, near Norwich, informed me a brood of young appeared with the hen in his garden. The old birds remained in some numbers until one year some heather-burning was done. The smoke seemed to frighten them, and they were noticed getting up higher and higher, and eventually disappearing. Those turned out since have mostly gone. Where do they migrate to? Everything possible was done for the birds. Their surroundings appeared to be eminently suitable—junipers, birch, fir, rushes, grasses of many kinds, bracken, heather abound, and bog-myrtle was planted in suitable places. The river Little Ouse runs through the estate. A few Black Game still remain.

"In 1888-89 many Sand-Grouse were noticed, and one was shot by accident. In 1891 five Whoopers were unfortunately shot out of a herd of seven. In the early sixties the Peewit was very common on the Warren, and as many as 280 dozen eggs were sent to market every year. They, however, decreased enormously about twenty-five years ago, although no eggs were ever taken after May 1st. The numbers fell to sixty dozen, twenty dozen, and the last year they were collected the produce was only six dozen. Since that time none have been

taken, the proprietor having given strict orders for their protection, but the Peewit can now only be numbered by a few dozen pairs. The same scarcity is apparent in several districts; (March 19th) many Peewits are hanging up in the poulters' shops in Bath. In another week or two eggs also will be on sale! The birds may be foreign, but what difference does this make? Only that there will be fewer to migrate to these shores. There used to be three 'stands' of Golden Plover on the Warren; planting has destroyed one if not two of these sites, but it is probable that they still frequent the ground.

"Rough-legged Buzzards were quite common in the winter twenty or twenty-five years ago. I have often seen several on the wing at the same time. An Eagle frequented the Warren for two winters between 1870-80. Roe-Deer obtained from Würtemberg have been turned down in the young Warren Woods, and have increased considerably."

W. DALZIEL MACKENZIE.

Ornithological Notes from Shetland.—

RED GROUSE (*Lagopus scoticus*).—Two seen, Nov. 16th, 1902.

ARCTIC SKUA (*Stercorarius crepidatus*).—One flew over my head on Nov. 28th, 1902; this one was of the dark variety. Several others were reported to me along the east side of Shetland from same date and up till Dec. 6th.

LAPWING (*Vanellus vulgaris*).—A few seen from Nov. 22nd till Dec. 80th. One at west side of the island on March 10th. Another specimen which was rescued from a "hawk" (Peregrine?) brought to me alive on March 14th. Its right wing was broken, and part of the "scalp" on the same side torn up. I kept the bird for one day, but, though it ate readily some small worms and ran about freely at first, it gradually became weaker, and developed fits, falling over to the left side and turning round and round (always to the left), and died next day.

ICELAND GULL (*Larus leucopterus*).—One (a male) brought to me; several others seen Dec. 12th.

WHOOPER SWAN (*Cygnus musicus*).—On Dec. 18th, at 8.30 a.m., nine flew past my house in a S.W. direction; they rested for a few minutes on a small sheet of water about a mile away, but, being disturbed, rose and flew off to the southward.

CHAFFINCH (*Fringilla cælebs*) and SNOW-BUNTINGS (*Plectrophenax nivalis*) have not been nearly so plentiful as usual.

RAZORBILLS (*Alca torda*) and COMMON GUILLEMOTS (*Uria troile*) have been very plentiful.

LITTLE AUK (*Mergulus alle*).—A few seen; one (a young male) obtained.

SONG-THRUSH (*Turdus musicus*). — One seen on Feb. 20th taking shelter from heavy storm under lee of turf-dyke close to road.

MOORHEN (*Gallinula chloropus*). — An immature male caught on Feb. 25th.

SNOWY OWL (*Nyctea scandiaca*). — Seen at intervals since March 6th. This Owl is becoming very rare.

Note.—Of the many specimens of Razorbills obtained, I kept four, after careful dissection of many. Of these, two mature ones (a male and a female) have no white line from eye to bill, one mature male has the line well marked, while a young female has also a well-marked line. All the other specimens, old and young of both sexes, had the line. I have never till now come across specimens of the Razorbill without this white line from eye to bill, though my late father, in his 'Birds of Shetland,' p. 814, mentions having got one (a female) with this line wanting. Another rather curious specimen came into my hands on Jan. 29th, *viz.* a Guillemot, whose appearance puzzled me very much. I here give a rough description of the bird:—General colour above deep black, lower throat black, upper throat white, chin black. There is no white mark extending down sides of neck from behind the eye. The bill is much blacker at the base than in the Common Guillemot; it is also much heavier than in this variety, but not nearly so strong as in Brünnich's Guillemot, which, by the way, I have never seen alive. A faint white line extends along the lower edge of the upper mandible from nostril to gape. Under wing-coverts white and brown, brown at edge of wing. Bases of outer primary-shafts white. Sides of body washed with sooty marks, and feathers edged with black, as in Common Guillemot. Legs and feet a dark "jaundice" colour, webs darker. Length, 17½ in. from tip of bill to tip of tail. I thought the bird might be an immature Brünnich, but never having seen one in the flesh I sent the specimen to the Rev. Julian G. Tuck, who thinks it may be a hybrid between the Common and Brünnich's Guillemot. In all probability he is right, as the bird certainly shows characters of both varieties in the way of colour, marking, &c. — T. EDMONSTON SAXBY (Halligarth, Baltasound, Shetland, N.B.).

EDITORIAL GLEANINGS.

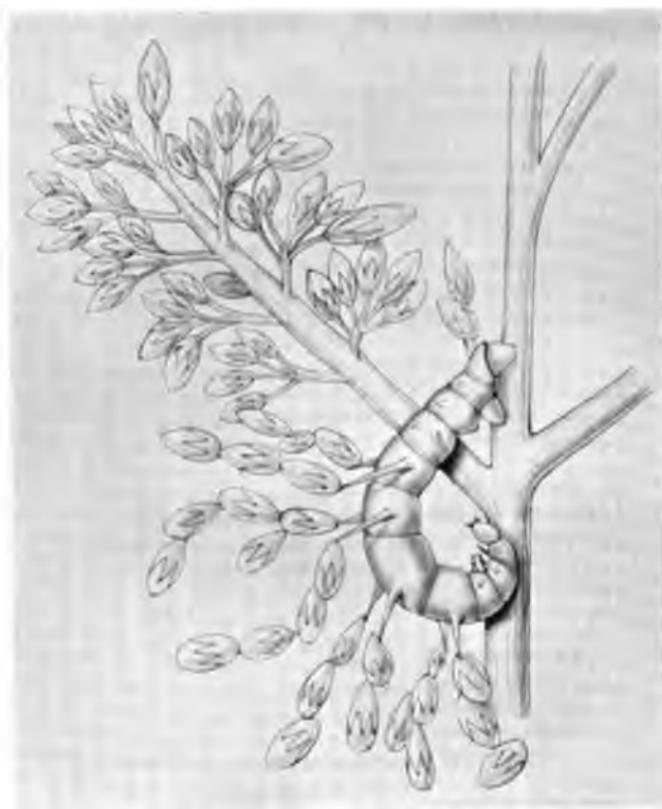
We have received the Fourth Annual Report of the Director, Capt. Stanley S. Flower, on the Zoological Gardens of Giza, near Cairo. The following is a most interesting note on the Shoebill, or Whale-headed Stork (*Balaeniceps rex*) :—

“ Two individuals were purchased by the Zoological Society of London in April, 1860 (*vide P. Z. S.* 1860, p. 248), from Mr. John Petherick, then H.B.M. Consul for the Sudan, who had obtained them in the Sudan, having hatched them from eggs ‘ procured from the Raik negroes . . . at a considerable distance from Gaba Shambyl ’; these two were the survivors ‘ out of six *Balaeniceps* shipped at Khartoum, but perhaps out of a score partially reared ’ (*vide op. cit.* pp. 195–199). These were the first specimens of this most extraordinary bird ever brought alive out of the Sudan, and, as far as is known, no others have been till the three, now living in the Giza Zoological Gardens, were brought down forty-two years later. In the autumn of 1901 Col. W. S. Sparkes brought a live *Balaeniceps* from the Bahr-el-Ghazal to Khartoum, where it is still living in the Governor-General’s Palace garden. This is the only other specimen known to be living in captivity. The three birds now at Giza, presented by Slatin Pasha and Bimbashi Fell, were obtained by the donors from the Bahr-el-Djur, in the Bahr-el-Ghazal province of the Sudan, and were kindly looked after by Mr. A. L. Butler, Superintendent, Sudan Game Preservation Department, till handed over to the Giza Zoological Gardens keepers at Khartoum, May 15th, 1902.”

A curious accident recently happened near Nantwich. While the butler of Mr. A. N. Hornby, the well-known cricketer, was cycling downhill he received a severe blow on the neck, which knocked him off his machine. He was stunned, but, recovering himself, found on the road where he was struck a dead Partridge. The bird had got up suddenly, and in its swift flight over the road had charged into the cyclist and broken its neck. It is by no means an uncommon occurrence for a Sparrow to fly against a cyclist, but it has rarely been known to happen to a Partridge.—*Sun.*

At the meeting of the Zoological Society held on March 17th last, Mr. J. T. Cunningham read a paper in which were described experiments he had made on two cocks of the Long-tailed Japanese Fowls in his possession, to ascertain what effect the artificial treatment asserted by some to be practised by the Japanese fanciers would have. The two birds had been hatched on the same date (Jan. 18th, 1901). One of the birds was left to nature, except that the tail was tied up in paper when the bird was at liberty, to keep the feathers from injury. In this bird the longest feather was 2 ft. 4½ in. in length in 1902, and growth ceased in March, and the feathers were moulted normally in the following autumn. In the other bird the feathers were stroked every day between the finger and thumb so as to pull slightly on the roots. In this specimen growth continued till the middle of July, and a length of over 2 ft. 9 in. was attained in some of the feathers of the first adult plumage. The author considered still more important the fact that ten of the feathers came out under the treatment, and that successors to these immediately grew again, and continued to grow through and beyond the following moulting season. The author concluded that the great length of feather and suppression of the moult were produced by the Japanese fanciers in the same way, by thus stimulating the feathers, and extracting them when or before they had completed their growth.

ON March 24th a meeting was held at Belfast in the Museum, College Square, for the formation of an "Ulster Fisheries and Biology Association." Prof. Gregg Wilson, Prof. Milroy, C. M. Cunningham, and W. Rankin were elected members of the Council, and Mr. Hugh H. Smiley the first President of the Association. The Earl of Shaftesbury, who was the chairman of the meeting, stated that the object of the Association was to investigate the flora and fauna of the local shores and fresh-water loughs. Prof. Gregg Wilson remarked:—"The day when everyone would be a good bit of a naturalist was coming very soon. In particular the study of plants and animals in their natural environment, in their homes, was to be specially encouraged. In the not very far distant future the Association hoped to have an aquarium for the study of living animals. They had arranged for the first distinct bit of work in Belfast Lough—the study of objectionable 'lodgers' in Cockles and Mussels."



Curious protective device in a Bornean lepidopterous larva.

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A CURIOUS PROTECTIVE DEVICE IN A LEPIDOPTEROUS LARVA.

By R. SHELFORD, M.A. (Curator of the Sarawak Museum).

(PLATE IV.)

ON May 16th, 1900, one of the native collectors attached to the staff of the Sarawak Museum brought in from the jungle a great quantity of a *Spirea*-like plant, which was to serve as food-material for some Nymphaline larvæ that had been collected a few days previously. The plant bore numerous cymose inflorescences which were still in bud and pale green in colour. A bunch of the plant had been laid on one side whilst the day's catch of insects was being overhauled, when it was noticed that one of the branchlets of an inflorescence was moving in rather a curious manner, since there was absolutely no breeze noticeable at the time. On closer examination it was found that the movement was due to a small Geometer caterpillar that had covered itself with buds cut from the inflorescence on which it was feeding. The caterpillar, which was only 9 millim. long, bore the following spine-like processes: a dorsal pair on the 4th segment, a dorso-lateral pair on segments 5, 6, and 7, a lateral pair on the 8th segment, and a short dorsal pair on the 11th; there were also some small tubercles in the positions

shown in the accompanying sketch. To these spines strings of buds were attached by silk, the buds themselves being fastened to each other by silk. The buds were all green and fresh, and it was quite obvious, after a few days' observation, that the caterpillar took care to provide itself with a new supply whenever the old one withered and turned brown, for strings of such brown and withered buds were frequently found below the food-plant, whilst the caterpillar itself was nearly always covered with fresh green specimens. Once or twice the experiment of removing by hand all the buds from the caterpillar was tried, and in every case the larva at once set to work to cover itself again; a bud would be shorn off with the mandibles, then held in the two front pairs of legs, and covered all over with silk issuing from the mouth of the larva; the larva then twisted round the anterior part of the body, and attached with silk the bud to one of the spinous processes; another bud would then be attached to this, and so on, until a sufficiently long string (generally three or four buds) was made, when operations on another spine would be commenced.

The larva fed on the buds of the inflorescence, scooping out the interior and leaving an empty shell; with its head and perhaps two thoracic segments buried in a bud, it presented a comical appearance, reminding a non-entomological friend of a cat with its head in a milk-jug. Very often the empty shell would not be dropped, but attached to a spine; in fact, on some days it was noticed that there were more shells attached to the spines than buds, and it was only under the unnatural conditions induced by the experiments above noted that the larva hastened to cover itself entirely with uneaten buds; the empty shells naturally withered more quickly than the buds.

When irritated the larva curled up in the attitude represented in the sketch, and it would remain in this position for fifteen to twenty minutes; it rarely moved much about, but when it did, it was with a curious swaying motion, which may have been part of the protective design, since it then looked like a branchlet blown by a breeze, or else the insect was top-heavy with the superposed buds.

The larva pupated on the 28th, spinning up a silk cocoon

covered with green buds; but it unfortunately fell a prey to those ubiquitous enemies of pupæ in the tropics—ants; and, as another specimen was never discovered, in spite of vigorous searchings through bushels of the food-plant, the ultimate form of the larva must for the present remain a mystery. In spite of a wonderfully deceptive resemblance to a vegetable growth, the larva must be nevertheless extremely rare.

ON THE VARIATION OF THE BEAN-GOOSE (*ANSER FABALIS*).

BY EINAR LÖNNBERG, C.M.Z.S., &c.

IN 'The Zoologist' (*ante*, p. 41), Mr. Frohawk has published an article on "British Bean-Geese," in which he endeavours to establish as a fact that there are two kinds of Bean-Geese entitled to specific rank. As I had some doubt about the validity of these so-called "species," I made up my mind to compare some Bean-Geese with the diagnoses which Mr. Frohawk has supplied in his communication to this Journal. Unfortunately we have had unfavourable weather for Goose-hunting this spring. Thanks to the kind assistance of several gentlemen, I have, however, had the pleasure of receiving for comparison eight freshly killed Bean-Geese, all shot in the vicinity of Upsala. In addition to these I have had at my disposition four preserved specimens* belonging to the Zoological Museum of the University of Upsala, near which town they had been killed. It is therefore with a dozen specimens that I propose making a comparison with Mr. Frohawk's diagnoses. It would, of course, have been desirable to have had a still larger series of fresh specimens, but it seems that this material is sufficient for a quite interesting and instructive comparison.

Mr. Frohawk characterizes his two "species" approximately in the following manner:—"Anser segetum."—Bill: average length of culmen about $2\frac{1}{2}$ in., that is, approximately 59 mm.; nail large and elliptical, included in the total length of culmen three and a half times; colour black, typically with only an orange band between the nail and the nostrils; but in this respect some variation is admitted, so that the orange sometimes extends below the nostril. Culmen considerably

* In addition to these I have studied some more preserved specimens, but, as they agreed with the others, I did not think it necessary to consider them here.

curved; average number of laminae along each edge of upper mandible from 20 to 21, but sometimes as many as 24. As a rule no white feathers at the base of the bill, excepting in old birds, in which a small frontal patch of greyish white may occur.

"*Anser arvensis*."—Bill: length of culmen rather over $\frac{2}{3}$ in., that is, approximately 68–64 mm.; nail proportionately small and rounded, included in the total length of culmen four and a half times. "Orange colour extending nearly over the whole of the upper mandible, having only a black bar commencing in front of the nostrils and running along the culmen to the base, where it becomes paler." Culmen straighter than that of "*segetum*"; average number of laminae about 28. A conspicuous band of white feathers extending along the whole basal edge of upper mandible.

Mr. Frohawk thus bases the difference between his two species principally on the following six points:—

1. Different length of bill.
2. Different proportions of the nail compared with the length of culmen.
3. Different degree of distribution of orange on the upper mandible.
4. Different number of laminae in the upper mandible.
5. Absence or presence of a white feathered band along the base of the upper mandible.
6. Different upper outline of culmen.

If we now proceed to make a comparison with the twelve Swedish specimens of Bean-Geese shot during the spring migration near Upsala, it will be best to consider the different characteristics one after the other. The first thing to do is to arrange the birds in accordance with the length of their bills (culmen), and to make the matter easier I propose to name the specimens with letters *a* to *m*. The length of the culmen is then in *a*=56, *b*=57, *c*=58, *d*=59, *e*=59, *f*=61, *g*=62,* *h*=62, *i*=62, *k*=63, *l*=64, and *m*=68 mm. A considerable variation is thus apparent. According to this measurement specimens *d* and *e* should be "*segetum*"; *a*, *b*, and *c* have a shorter bill than the typical "*segetum*" ought to have; *a* being even almost as much shorter than the typical "*segetum*," as the latter

* *g* is the male and *e* the female of the same pair.

should be shorter than "*arvensis*." Specimens *f*, *g*, *h*, and *i* should be intermediate between "*segetum*" and "*arvensis*"; *k* and *l* should agree with "*arvensis*," but *m* is rather long even for "*arvensis*," and as distant from the typical "*arvensis*" as the same should be from "*segetum*." All the twelve specimens form such a continuous series that it is impossible to make differences of any importance with regard to this characteristic.

If we now turn to point 2, it is true that specimen *a* with the shortest bill has comparatively the largest nail, which is contained only $3\frac{1}{2}$ times in the length of the culmen. But next to this, one does not come to any short-billed (= "*segetum*") specimen; on the contrary, the two longest-billed ones, specimens *l* and *m*, are most "*segetum*"-like in this respect, with a nail contained $3\frac{1}{2}$ times in the culmen. Then comes specimen *b* with $3\frac{5}{8}$, specimens *d* and *i* are alike with $3\frac{3}{4}$; then specimens *f* and *k* with $3\frac{3}{4}$, *e* with $3\frac{5}{8}$, and finally specimens *c*, *g*, and *h* with 4 times. In the greatest number of these specimens the proportions of the nail compared with the length of the culmen are intermediate between those that should be characteristic for Mr. Frohawk's "*segetum*" and "*arvensis*." In none of these specimens is the relation between nail and bill the same as it ought to be in "*arvensis*," and the size of the nail evidently does not stand in any such relation to the length of the bill as to enable any grouping of the individuals round two centres, each representing a different race, still less a species. It has already been remarked that the two longest-billed specimens exhibit such characteristics in this respect as, according to Mr. Frohawk, ought to belong to the short-billed form.

With regard to the distribution of the orange on the bill, a similar confusion makes itself apparent. The shortest-billed specimen *a* has the whole upper mandible orange, except the nail and a longitudinal bar on the culmen, which are black. Although short-billed it agrees in this respect best with Mr. Frohawk's "*arvensis*." Specimen *d* is again most "*segetum*"-like, as in this the orange hardly extends under the anterior end of the nostrils. Next to this comes the longest-billed specimen *m*, in which the orange extends as a narrow band along the lower edge of the upper mandible. In specimen *c* this band extends all the way to the feathered portion. In specimens *e* and *g* this orange band

under the nostrils is broader, but does not extend so far back as to the feathered portion, but it does so in specimen *f*. In specimens *b*, *h*, *i*, and *k* the orange extends broadly backward under the nostrils along the lower edge of the upper mandible, but in addition to this there are large blotches, more or less defined, of the same colour behind the nostrils. Specimen *l* comes next to *a* in its likeness to "*arvensis*," as the black extends from the culmen downwards only to the nostril, otherwise the whole upper mandible (except the nail) is orange. It has thus evidently no relation between the distribution of the colour of the bill and the other characteristics, and nothing indicating racial or specific differences. The variation of the colours of the bill might sometimes be still greater, as Mr. Kolthoff has told me from his rich experience, that he has shot Bean-Geese with almost the whole bill black, and others with the whole bill—except the nail, orange.

If we now consider the number of laminae of the upper mandible, the smallest number is found in the short-billed but "*arvensis*"-coloured specimen *a*, viz. 22 on one and 23 on the other side; 23 laminae are also found in the long-billed specimen *l*, 24 in *b*, 25 in *c* and *f*, 27 in *h*, 28 in *d* and *m*, 29 in *g*, *i*, and *k*. The largest number—30 on one and 31 on the other side—is found in specimen *e*. Within the limits of the variation of "*segetum*" thus come the short-billed *a* and *b*, and the long-billed *l*; several are intermediate (*c*, *f*, and *h*), but the others might be termed "*arvensis*"-like.

Concerning the development of the white feathers at the base of the bill, the most short-billed specimen *a* is most "*arvensis*"-like, having a broad continuous basal band. A similar narrow band is present in specimen *l*, with a bill of "*arvensis*" length. But, on the other hand, the rather long-billed specimen *h* has not one white feather, and is thus "*segetum*"-like. In *f* there are some very few white feathers, but not so many as to form patches. In all the others there is a small frontal and still smaller lateral white patch at either side of the base of the upper mandible. In specimens *e*, *g*, *k*, and *b* these are very little developed, somewhat better in *c*, *i*, and *m*, and almost confluent in *d*. The more or less great development of white feathers at the base of the bill cannot denote any division

in different species. While discussing this characteristic and its variability I may add that last spring I saw a Bean-Goose in which the orange-coloured lipochrome of the bill had immersed the otherwise white feathers at the base of the bill in such a manner that this Goose possessed an orange-coloured feathered band along the base of the upper mandible.

The outline of the bill of the Bean-Goose is variable, but it does not always vary in accordance with the diagnostic rules of Mr. Frohawk. For instance, the culmen of the long-billed specimens *m* and *g* is more convex than in any of the others, and the short-billed specimen *c* has a rather strongly concave outline of its culmen.

The following table will facilitate the understanding of the distribution of the five first-mentioned characteristics among these twelve Bean-Geese, if "s" means "*segetum*"-like, "a" = "*arvensis*"-like, and "i" = intermediate, with the letter between parentheses indicating in which direction the variation tends to go. The sixth characteristic is left out, as being rather arbitrary :

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>k</i>	<i>l</i>	<i>m</i>
1.	< s	< s	< s	s	s	i	i	i	i	a	a	> a
2.	< s*	> s	i	i(s)	i	i(s)	i	i	i(s)	i(s)	s	s
3.	a	i(a)	i	s	i	i	i	i(a)	i(a)	i(a)	i(a)	i(s)
4.	> s	> s	i(>s)	a	> a	i(>s)	a	i(<a)	a	a	> s	a
5.	a	i	i	i(a)	i(s)	s(i)	i(s)	s	i	i	a(i)	i

From this table it may be seen that the intermediate characteristics are most common, and that the others are distributed in such a manner at both ends of the series, as well as in the middle, that it seems quite impossible to divide the specimens in two specific or even racial groups with the aid of these characteristics. I think accordingly that the conclusion may be drawn from this comparison that it is impossible to maintain two such species as *Anser segetum* and *A. arvensis* according to Mr. Frohawk's definition, because there are to be found all kinds of intergrading and connecting specimens.

The great variability of the Geese has long been known, and it is possible that the great variation found in these birds can be explained partly by their habit of mating for lifetime (which

* The nail larger, but the number expressing the relationship smaller, than in "*segetum*."

lessens the panmixie), and partly by their strength and intellectual faculties. It is therefore evident that a slight variation in one or the other direction is of less importance for such strong, intelligent, and watchful birds as the Geese than for weaker birds not possessing so many qualities useful in the struggle for life. It is also possible, and even probable, that through isolation some divergences may be fixed, and geographical races, subspecies, &c., originate, or have already done so.*

The variation of these birds is therefore well worth study, especially in connection with geographical distribution and biology, but the infinite splitting in "species," which cannot be separated by any valid characteristics, does not do much good.

Upsala.

* *Anser brachyrhynchus* breeding in Spitzbergen is, for instance, a quite distinct species, although related to the Bean-Goose, but now differing from it in exterior as well as skeletal characters. Sushkin's *A. neglectus* might be another.

BIRD NOTES FROM CHESHIRE DURING THE WINTER OF 1902-1903.

By T. A. COWARD.

IN spite of the mildness of the weather in the winter of 1902-1903 some interesting birds visited Cheshire, and possibly also the absence of a prolonged frost accounted for the lengthy stay of some of the more unusual visitors. It is not my intention in this paper to give a diary of the winter months, but only to record the occurrence of a few of the more noteworthy birds. The Knot which was picked up at Bowdon on Oct. 24th has already been mentioned in this paper (*ante*, 1902, p. 467), and the Pomatorhinus Skua and Gannet, which were obtained respectively at Saughall and Queen's Ferry in October, were recorded by Mr. A. Newstead ('Field,' Oct. 25th, 1902).

For more than a week in the first half of October an immature Cormorant frequented Redes Mere, a sheet of water over twenty miles from the nearest tidal estuary; and another, a little later, was reported from Great Budworth. Early in the month a Cormorant was shot on the Mersey near Warrington, but this is not so unusual, for the bird not infrequently ascends the rivers for some distance.

A Bittern was observed on the margin of Budworth Mere at the end of November, and was seen many times during the following three months. It generally frequented a dense reed-bed, but was observed in other places round the banks, often crouching amongst the litter of dead reed-stems which marks the highest point reached by the water. Amongst these brown withered reeds its colouring rendered it inconspicuous. After several unsuccessful searches I succeeded in flushing it from the reed-bed; it did not rise until I was about five yards away from it, and then it flew with a loose heavy flight along the margin of the mere, barely topping the reeds, its long green legs dangling and its head only partially drawn back. A few days later Mr.

C. Oldham found it near the same spot; it was about three yards away from him when it rose. This time, after flapping across the reeds, it gathered up its legs behind it, drew in its neck, and crossed the mere, flying like a Heron. When the hounds met at Marbury on Feb. 14th they drew the reed-bed, and again disturbed the bird, but probably owing to the number of people on the banks it did not cross the water, but simply moved out of the way of the dogs, crouching down again at once. Four days later (the 19th) was the last date on which it was noticed. The gamekeeper and others at Great Budworth are to be congratulated that the bird was able to stay so long without being shot.

On Dec. 14th Mr. Oldham saw an old male Goosander with the Ducks on Tatton Mere, and on the 17th I went to look for the bird, and found it in company with another—a brown-headed bird. They swam apart from the other fowl—Mallards, Tufted Ducks, and Pochards—and after a time got upon the wing, flying to a part of the lake where I obtained a still better view, being near enough to see the rosy tinge upon the breast of the old drake. The brown-headed bird—a female or young male—dived much more frequently than the old male; I timed some of the dives, and found that they varied from a little under half a minute to one minute forty seconds. Once one of the birds—I think the old drake—uttered a long harsh “karr,” but this was the only time we heard any of the birds utter any sound, though we watched them many times during December, January, and February. A few days later we again carefully timed the duration of the dives; as a rule they only lasted for from seventeen to twenty seconds, but once again we found the old male remained beneath the water for a hundred seconds.

On Dec. 27th there were two green-headed males and three brown-headed birds on Tatton, and at the same time there were a couple of Goosanders, too far away to distinguish their colours, on the neighbouring mere at Rostherne. Tatton Mere was frozen over during the frost in January, and though we visited Rostherne, which remained open water, we failed to find the Goosanders, but on such an extensive sheet of water, and amongst a great crowd of fowl, it is quite possible that we missed them. When the thaw came the birds returned to the former haunt,

but we missed from amongst them the oldest drake, a bird which showed a great deal of white when it flew; it is not improbable that it had been shot, for by this time the birds were getting very shy and wild, as if they had been fired at.

It was not until the end of January that we discovered that at least eight Goosanders had been in the neighbourhood. On the 24th of that month we watched at close quarters six brown-headed birds fishing in a narrow portion of the mere, and two of the birds we had seen previously had been green-headed adult males. The portion of the mere where the birds were feeding is separated from the main sheet by a shallow strait; it is in fact a sort of subsidiary pond. In the shallows the small fish were jumping, no doubt frightened by the assaults of the birds. Often five Goosanders were below the surface at once, and the water was churned into swirls and eddies above them. At last one of the birds saw us, and immediately submerged its body leaving only its head and neck above the surface. Then it rose followed by the others, but without a sound, save the splashing of their wings and feet as they crossed the pond. Clearing the water they swung round and again passed close to us, near enough to reveal the detail of their plumage. During the earlier part of their stay the Goosanders kept apart from the Mallards, but later they often swam in company with the other Ducks, and it was no unusual thing to see them standing or resting on the grass of the bank amongst a large party of Mallards. When this was the case, however, the Goosanders were always close together, and not scattered amongst the other birds. On the 1st of March we saw them on the water for the last time. A week later there were no signs of Goosanders on Tatton.

On Dec. 26th, Mr. C. Oldham, Mr. F. Brownsword, and I obtained an excellent view of a Little Gull as it rose from the edge of the Manchester Ship Canal between Eastham and Ellesmere Port. Its flight was desultory and strikingly different from that of the Black-headed Gulls, with which, though there were many in its immediate neighbourhood, it was not consorting. It flew slowly up the canal, and then down again, twice passing within a few yards of where we were standing on the bank; it gave us an opportunity of observing it both from above,

when it flew near the water, and from below, when it passed just above our level. Its size, the roundness of its wings, the dark markings on its nape, and the very dark colouring on the under surface of its wings were noticeable, but what struck us most was the entire absence of black upon the primaries and upper surface of the wings when seen from above. The tail was quite white and the legs bright red. Judging by the pureness of its grey mantle and the absence of a tail-bar, it was an adult bird.

Gulls, as usual, occurred inland in some numbers. We met with no Great Black-backed Gulls away from the tidal waters, though we saw a few on both the Dee and Mersey estuaries. Black-headed Gulls are now so common on the inland waters that the presence of fifty or sixty at a time is hardly worthy of special notice. At all seasons of the year this semi-marine bird is to be met with on some of the meres and "flashes," and it is frequently abundant on flooded meadows and in the fields of Cheshire. From time to time mature and immature Herring-Gulls and Lesser Black-backs visited the different waters, and Common Gulls were not infrequent. Two, and for a time four, frequented Tatton from the end of November until March.

There were perhaps not so many winter Ducks upon the inland waters as usual; the numbers of the different species fluctuated considerably, but in such a well-watered county the birds undoubtedly move from mere to mere, so that it is unsafe to say that only certain species are present at any particular time. Mallards, in considerable numbers, use the meres as diurnal resting-places; early in October the flocks began to frequent the waters; in February and March their numbers decreased. At the end of November there were perhaps five hundred Mallards regularly on Tatton; and on Jan. 17th, during the short but hard frost, when Rostherne was practically the only open water, the surface of this mere was dotted by thousands of wildfowl, the great majority of which were Mallards.

Throughout the whole season we only met with a single Shoveler, a drake which consorted with the Mallards on Budworth during the second week in December. The rarity of this Duck is noticeable, for in the winter of 1901-1902 there were frequently one or two with the Mallards on both Tatton and Budworth meres.

Teal, singly or in twos or threes, accompanied the larger Ducks all through the winter; quite early in the season we met with them at Tatton, and on Budworth and other waters they were present. Even when the light was so poor that we could not distinguish the little birds, we could tell that they were present when we heard the short sharp "krit" amongst the loud quacks of the Mallards. On the 19th of March I flushed thirteen Teal from a secluded reed-fringed pond near Knutsford, on an estate where for many years Teal have bred in safety.

Wigeon were never numerous, but odd birds turned up from time to time on different waters, and they were reported as being abundant in the estuaries; it should, however, be borne in mind that amongst wildfowlers the name "wigeon" is applied to many species of Ducks.

The Diving Ducks were somewhat late in appearing; it was not until Nov. 2nd that we saw a couple of Tufted Ducks on Tatton Mere. Later in the same month Mr. F. S. Graves saw a mixed flock of Tufteds and Pochards on Redes Mere; he calculated that it numbered upwards of sixty birds. Early in December, when Tatton Mere was half frozen over, some thirty Pochards and a single Tufted Duck were noted, and about the same time flocks of perhaps eighty Pochards and thirty Tufted Ducks frequented Budworth Mere. Later in December we saw a considerable number of Pochards, but no Tufteds, on Tatton and Rostherne, but early in January both species were present on Budworth. A little later—on Jan. 10th—there were from seventy to eighty Tufteds and perhaps twenty Pochards at Tatton, but four days after this there was not a single Tufted Duck on Budworth, although there were quite one hundred and fifty Pochards. Many of these birds remained on a small patch of open water on this mere when the rest of the water was given up to skaters. On Rostherne on the 17th, when Mallards were so abundant, both Pochards and Tufted Ducks were present in some hundreds.

After the thaw both species of Diving Duck visited Budworth, and there were a few Tufteds on Tatton. Early in February the numbers of these Ducks became still more irregular, seven or eight Tufteds and a single Pochard being all that I could see on Budworth on the 5th and 18th; while at the beginning of March,

though there were none on the big mere at Tatton, there were over sixty Tufteds on the smaller and more secluded pool at Booths. On March 14th, however, when the flocks of Mallards on Tatton had dwindled down to some fifty birds, there were perhaps one hundred Tufteds, but we failed to distinguish a single Pochard.

One or two small parties of Golden-eyes spent some time on different waters, and in every case they were noticeably shy, flying even sooner than the nervous Mallards. Four or five were present on Budworth in the second week of December, and early in January we noticed four on this water and four on Oakmere. All these birds were either females or immature males.

During February and March several flocks of Siskins were seen in different parts of the county. Parties frequented the alders at Tabley, Chelford, and Heron Bridge near Chester, and in the neighbourhood of Capesthorne they were seen at Old Alderley, Monk's Heath, Redes Mere, and Siddington. Some of these last-named flocks may, of course, have been the same birds in different places, but the other situations where they were noticed are widely separated. On March 25th Mr. S. G. Cummings and I watched a large flock of Siskins in the fir-woods at Burton in Wirral. The birds, the great majority of which were males, were feeding amongst the slender branches of a clump of larches. We could not be quite certain what they were feeding upon, but it appeared to be the buds. Four days later Mr. Oldham saw a single Siskin at Tabley, close to the spot where flocks had been noticed several times earlier in the year.

Bramblings were more plentiful than usual. The largest flock we saw frequented some beech-trees that lined a country lane near Goostrey; here they several times far outnumbered the Chaffinches, which were also feeding on the beech-mast.

A few Jack-Snipe turned up during the frost, and on Dec. 7th Mr. Oldham put up a Sanderling from the border of Budworth Mere. The bird moved about from place to place, keeping, however, to the margin of the mere, and Mr. Oldham had several opportunities of examining it at fairly close quarters.

THE BIRDS OF N.W. WALES AND THE OPPOSITE COUNTIES OF IRELAND.

BY H. E. FORREST.

IN 'The Zoologist' for 1902, p. 17, Mr. Aplin compared the avifauna of Bardsey and Lambay islands, situated nearly opposite one another on the Welsh and Irish coasts respectively, and concluded that, with certain exceptions, the two were similar. On reading this paper it occurred to me that a comparison of the birds of Western Wales with those of the opposite coast of Ireland might prove interesting. Having been engaged for some years in collecting materials for a work on the Vertebrates of North Wales, I had ample details regarding Merioneth, Carnarvon, and Anglesey, whilst Irish records might be compiled from the 'Birds of Ireland.'

A glance at the map showed that the Irish counties opposite our Welsh district were Dublin, Wicklow, and part of Wexford; but as the isothermal lines in Ireland are further north than in Wales, it seemed that the comparison would be fairer if Wexford were omitted, although by so doing we should eliminate the district most favoured by migrants on arrival in Ireland.

This paper then deals, on the one hand, with the counties of Merioneth, Carnarvon, and Anglesey (=W.), and on the other with those of Wicklow and Dublin (=I.). It is confined to a brief statement of facts, and does not attempt to account for the many surprising differences in the respective avifaunas. As regards the statements themselves, the Welsh are derived from my own note-books, and are the outcome of notes contributed by nearly one hundred observers, to whom I render my sincere thanks. The Irish are abstracted from the 'Birds of Ireland,' and have been kindly revised by Mr. R. J. Ussher. It is fitting that acknowledgment should be made of the valuable services rendered to Irish ornithology by Mr. R. M. Barrington, who, by long-continued observations conducted at his own expense at all the principal Irish lighthouses, has amassed and reduced to order

an enormous amount of detail on the migration of birds, besides adding several very rare species to the fauna. It is chiefly owing to him that the Pied Flycatcher finds a place in the Irish list, while the Lesser Whitethroat and several other birds have thus been added to it.

As it would take too much space to deal with every species, I omit all those which are very rare, as well as those which are equally common in both districts. In this way the whole of the Thrushes may be disposed of as being common in both, though, curiously enough, the Mistle-Thrush only colonized Ireland during the last century.

WHINCHAT.—W. Fairly common, but somewhat local. I. Much less numerous; a few breed in both counties.

REDSTART.—W. Common in the wooded districts. I. Very scarce and local; a very few breed in Wicklow.

BLACK REDSTART.—W. Recorded three times only. I. Probably visits south and east coasts annually on migration.

LESSER WHITETHROAT.—W. Local. Occurs in the eastern parts of Merioneth and Carnarvon, but apparently not on the west coast. I. Almost unknown; has occurred twice on migration, in Donegal and Kerry.

BLACKCAP.—W. Common and generally distributed in all suitable districts.* I. Rare generally, but occurs in parts of Wicklow and Dublin, and is increasing.

GARDEN WARBLER.—W. Generally less numerous than the Blackcap, and more local, but occurs in most wooded districts, and is plentiful in some. I. Very local, and has not been known to breed in Wicklow or Dublin.

WOOD WARBLER.—W. Exceedingly numerous in the wooded parts of Western Wales. I. Very rare and local; a regular but very scarce summer visitant to Wicklow.

REED WARBLER.—W. Very local in district, but has been identified in several places in Carnarvonshire, whilst the nest has been found three times. I. No reliable evidence of its occurrence in Ireland.

* Anglesey is singularly devoid of woods, so that this and other woodland species are comparatively few. Still I have met with the Blackcap there, and several other Warblers—the Sedge-Warbler and Whitethroat—abound.

MARSH TIT.—W. Somewhat unequal in distribution, but common in many districts; rare on west coast. I. No authentic record during last fifty years, nor is there any Irish specimen in existence.

NUTHATCH.—W. Very common in Montgomeryshire, but rare elsewhere, and almost unknown on the west coast. I. Unknown.

WHITE WAGTAIL.—W. A regular spring migrant, passing up the west coast, but seldom remaining to breed. I. Migrant up the west coast of Ireland; neither known to visit Wicklow nor Dublin.

YELLOW WAGTAIL.—W. Not uncommon as a summer visitant, breeding in the east of Carnarvon and Merioneth, but on the west coast known chiefly as a passing migrant. I. Extremely local; nest found once near Dublin.

TREE-PIPIT.—W. In spite of repeated assertions to the contrary, the Tree-Pipit is quite a common bird in all the wooded parts of North Wales, and I have also met with it on open land where there were no trees, and even seen a dead one near the top of Snowdon. I. No sufficient evidence from any part of Ireland.

PIED FLYCATCHER.—W. Surprisingly numerous in Carnarvon and Merioneth, breeding in all suitable woods. I. Never known to breed; has occurred seven or eight times at certain lighthouses on the autumn migration; and once in April, in Co. Sligo.

RED-BACKED SHRIKE.—W. Generally distributed, though not numerous. I. Only once obtained in Ireland—in Co. Down.

HAWFINCH.—W. Slowly spreading westward, but as yet rare in Merioneth; unknown on the west coast, in Anglesey, or Carnarvon except near Llandudno. I. Known as a scarce winter visitor, but believed to have nested recently in Co. Dublin.

SISKIN.—W. A winter visitor of uncertain occurrence, but said to have nested once in Carnarvonshire. I. Much commoner in Ireland; resident, and breeds in both counties in fair numbers.

TWITE.—W. Appears occasionally in flocks between autumn and spring, but seldom if ever breeds. I. Common resident, breeding in both counties.

TREE-SPARROW.—W. Occurs in scattered localities in Anglesey and Carnarvon, but has not been identified in Merioneth. I. Almost unknown except near Dublin, where there is an increasing colony established some fifty years ago.

CROSSBILL.—W. An irregular winter visitor, said to have nested once in Carnarvonshire. I. Much more common and resident; believed to nest in both counties.

CIRL BUNTING.—W. Occurs in many scattered localities, and is resident. I. Unknown, except by report of one seen.

STARLING.—W. Very numerous, resident, and increasing. Migrational movements on a large scale occur on the west coast between autumn and spring. I. Numerous and increasing, but only established as a breeding species within comparatively recent years. Its numbers are greatly swelled in winter by immigrants.

CARRION CROW.—W. Extremely numerous in the mountainous districts, especially in Merioneth, where it is to a great extent gregarious. I. Almost unknown in Ireland; a very few may survive on the coasts of Cork and Mayo.

HOODED CROW.—W. A rare casual winter visitor, and particularly scarce on the west coast. I. *The Crow of Ireland*, common and resident, breeding in both counties.

JAY.—W. Generally distributed and common in wooded districts unless its numbers are artificially reduced. I. Very local; breeds in increasing numbers in West Wexford, but rare in Wicklow and Dublin. Its range is almost confined to certain river basins. Outside this area it is practically unknown.

CHOUGH.—W. Formerly common, and used to breed all along the coast, but is decreasing rapidly. Most of its old haunts are deserted, so that it is now almost confined to certain parts where the coast is precipitous. It bred in Merioneth and Anglesey up to quite recent years, and there are possibly still a very few pairs on those coasts. I. Used to breed on the coasts of Wexford and Dublin, but has ceased to do so. It is still common, however, in many other parts of Ireland.

GREAT SPOTTED WOODPECKER.—W. Fairly common and generally distributed in wooded districts. I. An accidental straggler only, recorded twice in Wicklow and twice in Dublin.

LESSER SPOTTED WOODPECKER.—W. Rather rare and local. Occurs in East Merioneth, but not on the west coast. I. Two recorded in Wicklow many years ago, none since. No specimen exists.

GREEN WOODPECKER.—W. Occurs throughout the district;

more numerous in the eastern than the western part. I. Not recorded in either of the two counties; only three instances in Ireland.

TAWNY OWL.—W. This is the commonest and most generally distributed of the Owls in Wales, and numerous in the west. I. Unknown, a bird shot in Co. Down, Nov. 19th, 1900, having proved to be introduced.

COMMON BUZZARD.—W. Resident and breeds in fair numbers in the wilder parts of Merioneth and Carnarvon, nesting both on cliff-ledges and in trees. I. Now only a casual visitor, though it bred in the north up to twenty years ago.

ROUGH-LEGGED BUZZARD.—W. Rather rare winter visitant, chiefly to East Merioneth. I. Much rarer; only recorded once in the two counties.

STOCK-DOVE.—W. Common and generally distributed; particularly affects the coast, and breeds both in cliffs and burrows in sandhills. I. Increasing, especially in Wicklow, but was unknown in Ireland prior to 1875.

TURTLE-DOVE.—W. Not uncommon as a summer visitant in the eastern part of North Wales, and is increasing and extending its range westwards. On the west coast it is just establishing itself, though as yet very rare. I. Occurs irregularly on spring and autumn migrations, but there is no satisfactory evidence of its breeding.

BLACK GROUSE.—W. Seems to have a precarious footing in Wales, though it keeps turning up in unexpected places. Attempts to introduce it in fresh localities almost always fail. I. Unknown except where introduced; soon dies out.

DOTTEREL.—W. Rare, but occurs on some of the western mountains during the spring migration. I. Very rare; not recorded in either county.

WOODCOCK.—W. Occurs in considerable numbers, but rarely nests. I. More plentiful; nests in both counties.

RUFF.—W. Only recorded three or four times. I. Recorded thirteen times in the two counties.

COMMON GULL.—W. Fairly plentiful from autumn to spring, but never stays to breed. I. Does not nest in Wicklow or Dublin, but has several breeding stations in the north and west, as well as one on an island off Kerry—its southernmost breeding limit in Europe.

STORM-PETREL.—W. Occurs in small numbers on the west coast during rough weather, generally in autumn. I. More common in Ireland; breeds in the west, but not in our two counties.

BLACK GUILLEMOT.—W. Said to have bred on the Orme's Head a century ago, but never does so now, and is indeed but a rare straggler nowadays to North Wales. I. Breeds in small numbers on the Dublin coast, less numerously in Wicklow. It is more often met with in the north and west.

It is impossible to read the foregoing without wondering what can be the causes which have produced such wide discrepancies in the faunas of two districts so near together, and so similar in climatic conditions. In the case of a sedentary species such as one of the Woodpeckers we can understand fifty miles of sea acting as a barrier; but if we take the case of a regular migrant such as the Tree-Pipit, it seems passing strange that no individual of the species—so common on the one side of the Channel—should ever find its way across the water to the Emerald Isle. Here is, indeed, ample scope for study and reflection.

THE MOLLUSCA OF THE GREAT YARMOUTH DISTRICT.

By A. PATTERSON.

UNTIL very recent years the Mollusca of the Yarmouth District, like the invertebrates in general, have received very little attention at the hands of local naturalists. Mr. J. B. Beckett (now of Lynn) in 1889 drew up what was the first authentic list, in which nearly eighty species are enumerated, covering his researches for the previous two or three years among the marine and other animals of this order. I myself have not so fully studied the species, and have in consequence entered largely into the "findings" of Mr. Beckett, and have also had access to the lists of one or two other county naturalists.

The Mollusca, especially the marine species, are not advantageously studied without some trouble on the part of the investigator, so few comparatively being found on our flat sandy shore, and then but mostly as broken fragments of shells; and he must needs go afloat with dredge and proper apparatus to secure the various species found frequenting the roadstead. I have persuaded shrimpers to help a little in this matter, but, as in the case of crustaceans, they either do not trouble, or have not time to preserve "finds," or even should anything more than usually attract their attention it is laid aside and afterwards forgotten, or more often the remark is passed, "I chuck'd it away, seein' as you didn't come round for it."

I have to thank Mr. F. W. Harmer, F.G.S., for a ticked list of species found by himself and his son, Dr. S. F. Harmer, of Cambridge, during a day or two's dredging in the neighbourhood of Yarmouth and Lowestoft, when they met with nearly forty species.

The Cephalopods are uncertain visitors, except in the case of the Little Squid (*Sepolia Rondeletii*), which is most abundant here in the summer months.

The Fresh-water Mollusca, of course, and those peculiar to the marshy district, are less difficult of study, and if more systematically worked "it is probable," say the Messrs. Paget in their 'Sketch of the Natural History of Great Yarmouth,' "that novelties would be met with in our salt marsh-ditches, in many of which the weeds are covered with a variety of shells, which could scarcely fail to be productive of interest."

The list below will, for the purpose of those who may hereafter more diligently pursue the subject, be of some use, inasmuch as it will form a basis on which to continue investigation and observation. It must be understood that the area worked has been confined exclusively to the immediate neighbourhood of Great Yarmouth.

As far as possible I have added the local status of the various species, which the following abbreviations will make sufficiently plain:—C., common; A., accidental; O., occasional; N. C., not common; F., frequent; B., J. B. Beckett; H., F. W. Harmer.

MARINE BIVALVES.

Ostrea edulis, Linn. Oyster.—O. During the palmier days of the local trawl fishery many "trunks" full of very large coarse-shelled Oysters were brought to the fish-wharf, the shells being rough and distorted, and exceedingly thick, in many cases perforated with hundreds of worm-borings, and covered with *Actinia*, *Serpula*, and Zoophytes. This Oyster is a coarse rank-tasting morsel, and known vulgarly as the "Smack-Oyster," in distinguishing it from the smaller, better-flavoured, cultivated mollusc—the "real native," and other brands. On occasion I have known anchors brought to the surface covered with Oysters of all ages and sizes. Our roadstead, however, with its strong tides and "live" sand, is not conducive to the well-being of spat or the juvenile Oyster. Many years ago a bed was discovered between Yarmouth and Lowestoft, but was soon worked completely out.

Pecten varius, Linn. Pecten.—N. C. "A few specimens north of Britannia Pier" (B). Single valves of this and *P. opercularis* are occasionally washed up on the beach, and the shrimpers take small examples.

P. opercularis, Linn.—O. "Common near Lowestoft" (B.).

Mytilus edulis, Linn. Mussel.—C. The Yare and the channel on Breydon are in places literally "paved" with this species, dredging

for which formerly constituted a remunerative occupation to many men in the winter months, among the shrimpers and certain "Breydoners," but, owing to the representations of several local doctors and the Medical Officer of Health, the practice was discontinued. It was alleged that certain cases of poisoning and numerous typhoid outbreaks were traced to the eating of river-taken Mussels. It can hardly be expected, with the abominable pollution of the local waters by sewage, this mollusc could remain untainted. Swarms of small Mussels are attached to the pier-piles at Gorleston, and any vessel long afloat in the harbour becomes swarmed with Mussels and Acorn barnacles (*Balanus balanoides*). A few bags of Mussels are sometimes sent away for bait, and latterly a quantity have been sent away to the Blakeney district, where the water is sufficiently pure for their culture.

Modiola modiolus, Linn. Horse Mussel.—C. "Common in drift-sand, and on seaweed" (B.). Large examples are not often found, although after strong northerly gales the roots of the oar-weed (*Laminaria digitata*) are sometimes seen with one valve attached. I have received small examples from the shrimpers. After a rough series of winds pecks of empty shells were, in company with hundreds of Star-fish (*Uraster rubens*), thrown up on the beach early in April, 1902.

Nucula nucleus, Linn.—F. Several have been brought me by the local shrimpers.

N. nitida, Sowerby.—Found by Messrs. Harmer. Very common at Lowestoft.

Montacuta bidentata, Mont.—"In drift" (B.).

Loripes lacteus, Linn.—R. "One specimen, Gorleston" (B.).

Cardium exiguum, Gmel.—(H.).

C. edule, Linn. Common Cockle.—C. Numbers are found on Breydon flats, of small size, about six or seven inches below the surface, a few occasionally being found at the top under the *Potamogeton*. It seldom grows larger than a filbert-nut, and is never gathered by the boys who in summer go "winkling." The Curlews and diving Ducks that frequent Breydon in severe weather undoubtedly do collect stray specimens. Some years ago, by accident, a very plentiful "lay" of Cockles was found in a sandy stretch by the river-side off Gorleston, which, upon discovery, was allowed no rest until the colony was entirely extirpated.

Tapes pullastra, Wood.—(H.).

Tellina balthica, Linn.—C. "After a gale the empty valves are plentiful on the beach" (B.). The shells found are usually quite polished by the action of the sea. A few sometimes seen containing the animal. This species is met with on Breydon.

T. fabula, Gron.—(H.).

Donax vittatus, Da Costa. — (H.). I have received a few from the shrimpers.

Mactra stultorum, Linn. Radiated Trough Shell.—C. In December, 1899, after a strong wind and a scouring tide, bushels of this species were washed up on Gorleston beach. Undoubtedly this mollusc offers great attractions for the flocks of Scoters which occasionally frequent this coast all the winter. I have had examples from the shrimp-nets, and in the winter of 1901 found some large valves near Gorleston Pier.

M. solida, Linn., var. *elliptica*.—(H.).

Scrobicularia nitida, Müll.—F. C. Harbour mouth.

S. alba, Wood.—“ Few, harbour mouth ” (B.).

S. piperata, Bellon. — C. Abundant on Breydon. The empty valves, protruding from the mud in all directions, give the flats in certain lights a very remarkable appearance. Living examples are found a few inches below the surface.

Solen siliqua, Linn.—O. After gales a few empty valves are thrown up on Caister beach. Some years ago several hundreds were cast up alive; these drew together a great congregation of Gulls of various species, delighted to find so abundant and palatable a supply of food. Quite a sprinkling on beach, April, 1902.

Corbula gibba, Olivi.—(H.).

Mya arenaria, Linn. “ Clam.” — C. Abundant on Breydon, but is never eaten, nor even used locally as bait. Mr. Southwell tells me it “ is both eaten and used for bait by the Lynn people.”

M. truncata, Linn. — “ Young only found. In drift ” (B.). I met with a fine example, April 8th, 1902.

Saxicava rugosa, Linn.—O. (B.).

S. var. arctica, Linn.—(H.).

Pholas dactylus, Linn.—O. “ In pieces of chalk ” (B.). I have occasionally found this species in lumps of chalk that undoubtedly were originally used as ballast in vessels probably wrecked.

P. candida, Linn. — “ Few washed up on Gorleston beach ” (B.), (H.).

Teredo navalis, Linn. Ship-worm.—C. Was formerly exceedingly destructive to the Gorleston piles, and to those of the piers. The old laborious process of covering the lower parts of piling with flat-headed nails has been superseded by saturation of the timbers with creosote.

MARINE UNIVALVES.

Chiton cinereus, Linn.—“ Scarce, harbour mouth ” (B.).

Patella vulgata, Linn.—C. “ Gorleston Breakwater ” (B.).

Helecion pellucidum, Linn.—“ In drift ” (B.).

Tectura virginea, Müll.—R. “ In drift ” (B.).

Trochus cinerarius, Linn. Ash-coloured Topshell.—F. I have received examples from the shrimp-nets.

T. zizyphinus, Linn.—I have had examples taken in shrimp-nets.

Lacuna divaricata, Fabr.—“ Occasionally in drift ” (B.).

L. pallidula, Da Costa.—“ Few occasionally in drift ” (B.).

L. var. gracilior.—“ One specimen, Yarmouth ” (A. Mayfield).

Littorina obtusata, Linn.—“ Harbour mouth ” (H.), (B.).

L. rufa, Maton.—R. Have found this on Breydon, and had an example or two from the shrimpers.

L. littorea, Linn. Common Winkle.—C. Very fine examples are abundant on Breydon, on the stretches of *Potamogeton*. All through summer boys, and men occasionally, gather these, and sell for food. Myriads of the smaller shells, with *Hydrobia* and others, are gathered by the action of the tides and eddies into angles in the walls, known locally as “ shell corners,” and on a small scale form copies of the crag formations.

L. neritoides, Linn.—C. “ Common on Breydon walls under the bladder-wrack ” (B.).

Rissoa parva, Da Costa.—R. “ Drift ” (B.).

R. var. interrupta.—C. “ Abundant in drift ” (B.).

R. inconspicua, Alder.—R. “ Rare on seaweed ” (B.).

Hydrobia ulvae, Penn.—C. Every blade of *Potamogeton* is in summer swarmed with this species. Various shore-birds and *Palminipes* feed in turn upon it.

H. ventrosa, Mont.—C. “ Common on Breydon ” (B.). “ Plentiful in a ditch near Breydon ” (A. M.).

H. var. pellucida.—Breydon (A. M.).

Odostomia unidentata, Mont.—“ Rare. Drift ” (B.).

O. dolioliformis, Jeffr.—“ Rare. Drift ” (B.).

Natica catena, Da Costa.—F. C. Several examples brought me by shrimpers.

N. alderi, Forb.—O. Brought me by shrimpers.

Cerithium reticulatum, Da Costa. R. “ Harbour mouth ” (B.).

Purpura lapillus, Linn.—F. Breydon. Several also brought me by shrimpers.

P. lapillus var. *imbricata*.—(H.).

Buccinum undatum, Linn. Whelk.—C. Frequently taken in shrimp-nets. Also “on cod-lines” (B.).

Murex erinaceus, Linn.—F. Taken in shrimp-nets.

Fusus antiquus, Linn.—O.

Nassa reticulata, Linn.—R. (B.).

N. nitida, Jeffr.—“ Few ” (B.).

N. incrassata, Ström.—(H.).

Pleurotoma rufa, Mont.—(H.).

P. turricula, Mont.—R. (B.). I have had one or two specimens from a shrimp-boat.

Utricularia obtusus, Mont.—“ In drift ” (B.).

CEPHALOPODA.

Sepia officinalis, Linn. Cuttlefish.—O. Occasionally flings itself ashore; more often taken in the nets of the wolders and shrimpers. Sometimes great numbers of the “bones” washed ashore.

Octopus vulgaris, Lam.—R. Is occasionally taken. A fine example entangled in a “drift” herring-net, October, 1901; another, whose body was the size of a lemon, netted in 1902. This is rather unusual with such deep-water species.

Loligo vulgaris, Lam. Squid.—O. Now and again found on the beach.

Sepolia Rondeletii, Leach. Little Squid.—Numbers taken in the shrimp-nets every year.

FRESH-WATER BIVALVES.

Sphaerium corneum, Linn.—Common. Ditches on North Denes (B.).

Anodonta cygnea, Linn. Swan Mussel.—C. In Lound Reen, Fritton, Filby, and other broads; indeed, it is universally distributed.

Pisidium amnicum, Müll.—C. Abundant in dykes (B.).

FRESH-WATER UNIVALVES.

Paludina vivipara, Linn.—F. I have met with this species on the Bure, and in ditches at the west end of Caister.

Bythinia tentaculata, Linn.—O. “North Denes and Southtown ditches” (B.).

Planorbis vortex, Linn.—C. “North Denes and Southtown” (B.).

P. complanatus, Linn.—C. “Common in dykes north of the town” (B.).

P. corneus, Linn.—C. Common in Southtown ditches.

Physa hypnorum, Linn.—R. Found “near ‘Spotted Cow’” (B.); and Southtown marshes.

Limnaea peregra, Müll.—C.

L. stagnalis, Linn.—C.

L. palustris, Müll.—C.

LAND SHELLS.

Arion ater, Linn.—C.

Limax agrestis, Linn.—C.

L. maximus, Linn.—C.

Succinea elegans, Risso.—O.

Zonites collaris, Müll. — F. Mr. Beckett gives localities, Tower Road and Burgh Castle.

Z. nitidulus, Drap.—“Caister and Bradwell” (B.).

Helix aspersa, Müll. Common Snail.—Most abundant.

H. nemoralis, Linn., *H. hortensis*, Penn.—Abundant, but extremely local in their habitats. After a heavy dew, or on a very damp morning even after sunrise, the herbage on Breydon walls, within easy reach of the salt spray, is found covered with varieties of *Helix*. The furze on the North Denes used also to abound with the species, and after a bush has been burnt many shells with fire-dried bodies inside are exposed to view, sometimes with a dead Lizard or two amongst them. Mr. Beckett enumerates seven varieties. Careful search would undoubtedly add many more to the list.

Pupa umbilicata, Drap. — F. Mr. Beckett refers to examples brought him from the neighbourhood of the River Bure.

Clausilia rugosa, Drap.—O.

NOTES AND QUERIES.

MAMMALIA.

Notes on the Stoat (*Mustela erminea*) and Weasel (*M. vulgaris*).—Have any readers of 'The Zoologist' noticed how much smaller white or pied Stoats are than those of the normal colour? Nearly all those I have examined in this state have been females. Mr. Lydekker, in his work on the British Mammalia, gives the length of an adult Stoat as—body 10½ in., tail 6½ in. Two specimens I have in my collection in winter dress, taken in Surrey, measure, from tip of nose to end of tail, 10½ in. and 11½ in. I have also a fine male in summer dress, which measures 20 in. On referring to the Weasel, Mr. Lydekker says:—"Occasionally, though very rarely, the Weasel is stated to turn white in winter, the tail then retaining its reddish hue, although becoming paler than ordinary." I have the skin of a very small female Weasel, measuring 7½ in., taken in Russia, which is pure white throughout.—GORDON DALGLIESH (Clairval, Collings Road, Guernsey).

A VES.

Note on the Sedge-Warbler.—It is well known that the Sedge-Warbler (*Acrocephalus phragmitis*) is generally to be found in sedgy and marshy localities in the immediate neighbourhood of water or stream. I have, however, noted that about the time of this bird's arrival in spring, *viz.* about the first half of May, it may be met with not unusually in dry thickets or hedges, quite remote from any water or marsh. I have observed it then in a garden shrubbery quite a mile from the nearest spot which might be thought suitable to its habits. Last year a pair nested in a small thick copse in this neighbourhood, in a very dry spot, quite half a mile from the nearest water. This copse is on a chalky upland, nearly two hundred feet higher than the valley of the River Beane, where this bird is common. I had heard the birds singing in the thickets for some weeks, and ultimately found their nest in a dense growth of nettles surrounded by hazel and hornbeam scrub. It contained three eggs, and I saw both the male and female close to the nest.—ALLAN ELLISON (Watton, near Hertford).

White Wagtail visiting Bartragh Island, Killala Bay.—It will be interesting to ornithologists to hear that *Motacilla alba* has this season visited the island of Bartragh on April 27th; two birds were seen, and one specimen obtained by Captain Kirkwood, which I have forwarded to my old and valued friend Mr. W. Oxenden Hammond, of St. Alban's Court, Kent. As this is the sixth year in succession in which the visits have been recorded, since a regular look-out for the birds has been kept up by Captain Kirkwood, I think there can be no doubt but that a regular line of migration passes over Bartragh every spring, probably of birds going to Iceland. The birds are generally observed about the last week of April or the first week of May, and are especially seen if north or north-easterly winds are blowing, when the few birds visible are probably tired from flying against the winds, and pause on their journey to rest for a day, or for a few hours only, before resuming their northerly course. In my notes on the White Wagtail (Zool. 1898), I gave dates of occurrence for that year, which I need not recapitulate here, but give the dates for the five years since:—
1899. April 21st, one bird seen in stable-yard; May 4th, one seen feeding about a manure-heap also in yard.
1900. April 28rd, one seen in the garden, but Mr. A. C. Kirkwood, being very unwell at that time, was unable to keep up his observations, which accounts for only the one bird being noted.
1901. May 12th, two birds seen in yard; 20th, one seen feeding on lawn outside parlour windows.
1902. May 8th, 9th, 10th, and 11th, several birds were seen by Captain Kirkwood.
1903. April 27th, two birds seen and one obtained by Captain Kirkwood. As there are none of the common Pied Wagtails on the island, *M. alba* at once attracts attention, and the light grey back and very white cheeks and neck are so conspicuous that the attention of the observer is at once directed to the bird.—ROBERT WARREN (Moyview, Ballina).

The Status of the Goldfinch (*Carduelis elegans*) in Britain (cf. *ante*, pp. 28, 70, 104, and 152).

South-east Dorset.—The Goldfinch has been increasing in the last dozen years, and especially in the last four or five. The other day a charm of sixteen was seen near Wareham.—ARTHUR BANKES (Leadenhall, The Close, Salisbury).

North Oxfordshire.—It should be stated that our resident Goldfinches, which are to be seen here in small charms at any time in the winter, are of the small dusky race. In autumn we are visited by large light-coloured Goldfinches, and it seems that some of these also come in spring to breed.—O. V. APLIN (Bloxham, Oxon).

Ireland.—A common bird in Ireland. In Co. Wicklow it is very numerous, and I used to find a dozen nests or more in the season within a small area. In Wexford and Carlow I have found it equally common. In the remoter regions of the west, except in the very mountainous parts, it is numerous wherever there are trees or bushes large enough to furnish nesting places ; indeed, in some of the wildest districts, where trees are scarce, it is the commonest Finch.—ALLAN ELLISON (Watton, near Hertford).

Goldfinch in Australia and Tasmania.—In reading Mr. J. A. Harvie-Brown's interesting notes on the general decrease of Goldfinches (*Carduelis elegans*) throughout Great Britain, I thought it would be interesting to know that these little birds are rapidly spreading in other parts of the world ; for instance, in many of the settled districts of Tasmania, especially round Hobart, they are very numerous, and at the present rate of increase will soon spread over that island. Then, again, in the southern parts of Victoria, Australia, they are exceedingly plentiful, especially in the gardens round about Melbourne and Geelong, and in the latter city often nest in the elms and other trees that are planted by the side of the street in the suburbs. Linnets are also plentiful, especially in the thick scrub round the shores of Hobson's Bay, by Melbourne. In the gardens round about Melbourne Blackbirds and Thrushes are numerous and steadily increasing ; for instance, in my own garden this season several nests of both birds were found, and one pair of Thrushes reared two broods of three young each from the same nest, which is not usually the case. The European Starling can now be numbered by many thousands, and large flocks roost in these Gardens every night ; and we wish they did not, as the mess made by about ten thousand birds is very considerable, and when they are moulting the ground is littered with feathers under their roosting-places. — D. LE SOUËR (Director, Zoological Gardens, Melbourne).

Ravens nesting in Co. Antrim.—In 'The Zoolologist' for 1902, p. 194, I had the pleasure of recording the successful nidification of a pair of Ravens (*Cervus corax*) in Co. Antrim, not many miles from Belfast. Out of a nest of four young birds, I saw three on the wing with the parent birds about the middle of May ; they then disappeared from the district, and were not seen again that season. About the beginning of March this year the parent birds returned, and immediately commenced repairing the old nest, which was completed, evidently to their satisfaction, about the 24th ; up to the 26th no eggs were laid, and on the following day I was sorry to find a large piece of an over-

hanging rock had fallen and swept the nest with it to the ground. The poor birds, thus frustrated in their task by nature, are evidently not going to risk the same site again, as I have not heard of them being seen in the district since. I was fortunate in securing the accompanying photo of the nest.—W. C. WRIGHT (Charlevoix, Marlborough Park, Belfast).

[We have received the very interesting photograph of this nest.—ED.]

Carrion-Crow (*Corvus corone*) in the Irish Channel.—On March 81st, as I was crossing the Irish Channel from Dublin to Holyhead, I noticed a Carrion-Crow (*Corvus corone*) following astern of the steamer. When I first saw the bird we were still about twenty-five miles off the South Stack headland. It appeared to fly away from a large flock of clamorous Herring-Gulls which were greedily feeding on floating refuse. Whether the Crow was attracted seaward from the Holyhead district, where it is not uncommon, for the purpose of procuring food or not, it is hard to say. It leisurely followed the boat, being strong and buoyant on the wing; nor had it the appearance of a bird anxiously heading for its destination, overcome by migratory fatigue. In the distance I might have mistaken this bird for a Rook (*Corvus frugilegus*), but when it came several times quite close to the deck where I was standing, I could see by its characteristic flight and heavier build that it was undoubtedly a true *Corvus corone*. I may mention, in passing, that I am well acquainted with the flight of the Carrion-Crow, having often seen this species on previous occasions in different parts of England and Wales. When we came within three miles of Holyhead the Crow (which up till then had followed the vessel somewhat closely) left us, and steered for the land below the South Stack lighthouse. I watched it until it ultimately disappeared among the shadows of the cliffs. Although common in parts of England and Wales, the Carrion-Crow is extremely rare in Ireland, and it seems a curious fact that a few wanderers have not occasionally ventured across the Channel. This they may have done oftener than we think, as the Carrion-Crow is easily overlooked and confounded with the Rook.—CHARLES J. PATTEN (9, Summerfield, Broomhill, Sheffield).

Early Nesting of the Shag (*Phalacrocorax graculus*).—I was much interested in Mr. Raeburn's remarks on the nesting of the Shag (*ante*, p. 158). My experience with this species in the breeding season is very limited, but the following note will lend some support to the theory that the Shag is an early breeder:—In 1898 I was staying in Sark from March 22nd to 30th (*cf. Zool. 1898*, p. 274), and by the time I arrived the Shags, which are rather numerous on the island, had built their

nests, and some appeared to be sitting. I did not actually see any eggs in the nests, as most of them were placed in situations difficult of access, but I know that laying must have commenced, as on one occasion I saw a Raven, which had a nest and young near at hand, swoop down on a Shag's nest and fly away with one of the large white eggs in its bill.—F. L. BLATHWAITE (Monk's Legs Terrace, Lincoln).

Nesting of the Ringed Plover (*Ægialitis hiaticula*).—The nidification of this Plover is one of the most interesting adopted by British birds, interesting not only in itself, but in the light it throws upon the evolution or rather development in nest building of birds in general. In this neighbourhood the Ringed Plover builds at least three styles or classes of nests :—

Class 1.—What might be called primitive nests, viz. the eggs laid in a very slight depression, without any attempt to line the cavity. This occurs on smooth gravel banks, also on the rough shingle of the seashore.

Class 2.—The eggs laid in fields, the cavity of the nest lined with fragments of broken shells or small pebbles, sometimes both. In this case the nest was situated in a field of sprouting wheat quite five hundred yards from the seashore.

Class 3.—Is the most interesting. Constructed also in fields, where the eggs are laid on small pebbles, with a few twigs placed on the latter. There are also some twigs scattered about in the immediate neighbourhood of the nest.

This to my mind suggests the commencement of building with vegetable material, and to be only a few stages removed from the built nest described and figured (Zool. 1902, p. 28). In my experience the eggs usually lie with their pointed ends turned inward during the whole process of incubation, but there are exceptions to this rule, where one, two, or sometimes even three, point sideway. When a Ringed Plover is surprised on her eggs, she almost invariably runs some distance from the nest before taking flight. This run is comparatively short on the seashore, but when sitting in a field she runs further, sometimes two hundred yards at least, before flying. My experience coincides with Mr. Gurney's that the young are not hatched simultaneously.—J. E. H. KELSO (Southsea, Hants).

[Dr. Kelso has forwarded us some excellent photographs of these nests, which we regret we have not space to reproduce.—Ed.]

Scolopax rusticula breeding in Kent.—It may interest some of the readers of 'The Zoologist' to know that in the second week of last

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month (April) a Woodcock's nest was found in a wood in the neighbourhood of Orlestone, Kent. It had four eggs, which had to be taken, as the wood was being cut; they were all fresh and easily blown. Another nest was found with five eggs, which have been since hatched, and the young birds gone off. One of my keepers informed me that there was still another pair of Woodcocks about, and he supposed they must have a nest. We shot thirty-five Woodcocks last season, and left several in the hope that they would stay and breed. When shall we get a History of the Birds of Kent?—R. J. BALSTON (Springfield, Maidstone).

Variation in the Guillemot.—Mr. Saxby, in his very interesting "Ornithological Notes from Shetland," speaks of being puzzled by the black plumage of a Common Guillemot obtained last January, and that the Rev. Julian G. Tuck, to whom he sent the specimen, thinks it may be a hybrid between the Common and Brünnich's. I think they are both mistaken as to its being a hybrid, for I believe that the dense black-coloured plumage is the normal coloured winter plumage of the Common Guillemot. The first winter specimens of the Common Guillemot that I obtained in the month of December, for several years, also puzzled me, for, never before having seen one in that coloured plumage, I thought I had got a Brünnich's until I observed the slighter bill. Since then all the specimens that have come under my notice in winter invariably exhibit this black plumage, quite as deep and pure a black as that of a Razorbill or Brünnich's. I met with several specimens this winter thrown up dead on the sands of Enniscrone, and all were pure black-coloured, none showing the least trace of the sooty brown of summer.—ROBERT WARREN (Moyview, Ballina).

Birds killed by Ticks.—In reference to some previous notes under this heading (*ante*, pp. 108 and 155), I may say that unfledged nestling birds seem not unfrequently to suffer from the attacks of midges. I have noticed this especially in the case of young Greenfinches, which are often rather late in the summer in their nests, in shrubberies and gardens where midges are likely to be troublesome. I have seen these small but bloodthirsty insects satisfying their hunger from the bare bodies of the unfledged birds, and afterwards crawling about the nest distended with blood and unable to fly away. Indeed, the death of the nestlings has sometimes seemed to be attributable to no other cause but this.—ALLAN ELLISON (Watton, near Hertford).

NOTICES OF NEW BOOKS.

The Birds of North and Middle America. By ROBERT RIDGWAY.
Part II. Fam. Tanagridæ, Icteridæ, Cœrebidæ, and
Mniotiltidæ. Washington: Government Printing Office.

In 'The Zoologist' for 1902 (p. 154) we had the pleasure of giving a short notice of the first volume of this extensive work. The second volume has recently reached us, and exhibits the same erudition, analysis, and completeness in reference and synonymy as its predecessor. But will a final word in nomenclature ever be accepted? Ornithologists are not alone to-day in the peculiar position of knowing practically all about a species, but with no certain rule as to its scientific name. We will take the Rose-throated Tanager as an example. The 'Biologia Centrali-Americana' cannot be considered an ancient work; most of us thought its nomenclature had reached maturity, and in it Salvin and Godman, in agreement with Mr. Ridgway in 1873, called this bird *Pyranga roseigularis*. Now Mr. Ridgway entitles it "Piranga roseo-gularis roseo-gularis." Do we really gain by this mixture of archaism and modernness? We do not accuse the author of inconsistency; he has chosen his rule, and he faithfully follows it; his book is too important to be neglected; his authority too great to be ignored; but what name is a conscientious curator of an ornithological gallery to adopt, or a bewildered writer on general zoology to follow? Entomology is in the same condition. Douglas Jerrold, once writing to Dickens from Bath—or perhaps the names should be reversed, for we have not a handy reference—described that valetudinarian stone-built city as exhibiting a people who had risen from the dead, and built their houses with their tombstones. This archaic process in scientific nomenclature recalls that operation.

Variations in Animals and Plants. By H. M. VERNON, M.A.,
M.D. Kegan Paul, Trench, Trübner & Co., Ltd.

THIS book constitutes vol. lxxxviii. of the "International Scientific Series," and is devoted to a question which goes to the root of the most prevalent conception of evolution at the present era, for, as Wallace has remarked, "the foundation of the Darwinian theory is the variability of species." This variability has been hitherto recorded in a somewhat loose or impressionable manner by different naturalists, whose observations have formed most of the bricks used in current theories and conclusions. The investigation has recently been pursued, and principally by friendly advocates, by an altogether different method, and we are now beginning to understand the teachings of a mathematical biology. This is likely to attain vast results, for, although few naturalists care for, and most naturalists dislike, figures, we have recently read in an American publication that, in the opinion of Dr. G. B. Halsted, about one in two hundred persons in America possessed some sort of mathematical genius, a mental condition probably not confined to that country. The work done by what we propose to call mathematical biologists is the careful measurements, weighings, &c., of long series of a single species, found in a special environment and under special conditions ; the study of these by a mathematical process, and the results given in mathematical formula, thus providing for evolutionists a valuable material for biological statistics. Dr. Vernon has largely drawn on these data, and has thus focused very much valuable material in a well-arranged way in his discussion of the subject ; in fact, his volume is a storehouse of collected information of facts obtained by workers who have followed this process. The author, of course, has also views of his own, to which we can only refer the reader, and we will conclude with a quotation with which many will agree :—"In spite of all that has been written to account for the almost universally present adaptation which we see in animate nature, there is still a lingering doubt in the minds of many men as to the entire adequacy of the explanations hitherto offered."

Catalogue of the Collection of Palæarctic Butterflies formed by the late John Henry Leech, and presented to the Trustees of the British Museum by his Mother, Mrs. Elisa Leech. By RICHARD SOUTH, F.E.S. Published by the Trustees of the British Museum.

THE late John Henry Leech was a wealthy and enthusiastic lepidopterist. It appears from the biographical notice which prefaces this volume that, after some desultory collecting, he settled down to a distinct faunistic work, which resulted in the publication of a great book, "Butterflies from China, Japan, and Corea." Had he lived, it is more than probable that the same course would have been pursued with the moths. The material which formed the basis of this work was not only the result of his own personal expedition to the Eastern Palæarctic Region, but also included the collections of other expeditions promoted and subsidized by himself. With a splendid example of scientific patriotism his mother has presented the whole of his Lepidoptera to our National Museum, where it is now being incorporated with the largest collection in the world.

This catalogue has been compiled by his intimate associate, Mr. Richard South, and details the sexes, aberrations, and varieties of each species. It is therefore a publication to be perused by all students of Palæarctic Rhopalocera, as it affords a clue to what may be studied in the entomological catacombs of our great Museum. A good portrait of Mr. Leech is given at the commencement of the volume.

EDITORIAL GLEANINGS.

MR. W. L. SCLATER is returning to Cape Town to resume his duties as Director of the South African Museum. He will be heartily welcomed back, as the reform and energy he has expended in the cause of South African zoology has not been unrecognized. In the course of a few years he has guided and superintended the rearrangement of the collection in the new museum building at Cape Town. A series of volumes devoted to the fauna of South Africa has been commenced; four volumes have appeared, two of which are entirely and one largely dependent on his pen. The "Annals of the South African Museum" has also been founded, and two volumes completed. This is a worthy record. The position of Director of the premier Museum of South Africa is a responsible one, and is virtually at the head of zoological science in South Africa. A great feature of our colonial communities is their ever-increasing scientific independence, and this is becoming more pronounced every year. No longer is the greater part of the zoological work of South Africa published in London; the Museum at Grahamstown, now under Dr. Schonland, also inauguates its own annals. The same thing is true as regards Zoological Gardens. Those at Pretoria are best suited for Ethiopian animals, in both climate and soil, and fewer South African rarities will probably reach Regent's Park in future years. The work of our London societies is likely to become of a more philosophical nature, while the real faunistic work will become more and more to be found in colonial publications.

IT is quite a pleasurable surprise to find biology once more a subject matter for the 'Quarterly Review,' and in the January issue—a number very far removed from a weak one—not the least important contribution is devoted to the question of "South American Animals and their Origin," and bears the signature of R. Lydekker. The discussion is confined to the mammalian fauna, and is conducted on both zoological and palaeontological principles, and clearly demonstrates the peculiarity of the South American mammalian fauna as a whole, and its divergence from that of any other part of the world. The theory

of its primitive isolation is attested by facts, and, to use the words of the author, "during the deposition of the bone-bearing formation at Santa Cruz, South America formed an isolated continent, perhaps still partially connected by chains of islands with Australia or South Africa, or both. Here flourished in undisturbed possession of the country the ancestral Spider-Monkeys, Marmosets, Glyptodonts, Armadilloes, Ungulates, Rodents, and Selvas, some of which developed into their gigantic successors of the pampas period, while others, like the Astrapothere and Prototheres, died out without descendants. Subsequently the North and South American continents became connected, and a mammalian invasion from the north, and some migration from the south, is the almost certain story derived from zoological and palaeontological evidence." Mr. Lydekker has given a full review of our latest information on the subject, and the pages are illustrated by four plates.

We much regret the death of Prof. J. Victor Carus, which took place at Leipsic, in the eightieth year of his age. Apart from his eminence as a zoologist, he was perhaps better known as the editor of the 'Zoologischer Anzeiger,' a position he held from the commencement of that journal in 1878. He always took a very friendly interest in 'The Zoologist,' and it was in deference to his wish made a few years ago that we have since endeavoured to give the scientific as well as the popular names of animals referred to in our pages. Our contributors seem sometimes to scarcely realize that they are read by many nationalities, and that our British or *popular* names for animals can scarcely be recognized by foreign zoologists.

The announcement has been received from Tiflis of the death of M. Gustav Radde, the well-known naturalist and director of the Caucasian Museum and the public library of Tiflis. His biological work was principally connected with the fauna and flora of the South-western Caspian region; he also published accounts of his travels on the Russo-Persian frontier.

The 'Neue Freie Presse,' Vienna, publishes an interesting article on a recent addition to the Schönbrunner Menagerie. The pair of Wild Oxen, which have arrived at the Schönbrunner Menagerie as a present from the Russian Emperor, are to be seen now in the finest

condition after recovery from the fatigues of the journey. They are a male and female of the European Bison (*Bison europaeus*), also known as "Wisent," a near relative of the American Bison, but not, as is occasionally stated, Aurochs. The Aurochs, or Ur, with the exception of those preserved in a single Polish game-park, had already died out in the seventeenth century. The Austrian Ambassador, Freiherr von Herberstein (died 1566), had yet seen both Aurochs and Wisent living side by side in Polish menageries, and in his work, 'Rerum Moscoviticarum Commentarii,' has left us pictures of both species. Later the name "Aurochs" was applied to the Wisent of Lithuania. In the latter half of the last century this mistake was corrected, and it was made evident that the Aurochs and Wisent were quite distinct species of Wild Oxen. A semi-wild descendant of the extinct Aurochs may be the park cattle of the North of England, which have been carefully preserved for six hundred years by the rich territorial families in the enclosed forest parks of Chartly, Chillingham, and Cadzon Forest. The Wisent also is in process of extinction. It only remains in a wild state, strictly protected by game-laws, in a vast State-farmed district, covered with beech and pine, on the Bielaja and the Laba in the Caucasus. In these high valleys it lives at an altitude of between four thousand and eight thousand feet, and only comes lower down in the winter. For many hundreds of years the Polish kings and wealthy voevodas preserved them in large parks at Warsaw, Zamosk, and Ostrolenka, all of which were broken up in the time of the wars. A single such Wisent preserve still remains, in Russian Lithuania, in the woodlands of Bialovitza. Here the Wisent lives in herds of about twenty-five strong in a semi-wild state, carefully guarded by foresters. There are perhaps one thousand five hundred Bison, here and in the Caucasus, that prolong their contemplative existence, and in spite of all protection steadily dwindle. At the commencement of the eighteenth century the Wisent was still fairly numerous in the border forests between Poland and Prussia. There it was attacked by a contagious disorder, communicated through contact with tame cattle, which soon put an end to its continuance. Only in the larger zoological gardens, as in Berlin, do the European and American Bisons thrive satisfactorily. Specially deserving of mention, however, is the Wisent herd of Prince Pless in the Mezerzitzer Forest in Upper Silesia, where some Wisents received from the Bialovitza Forest have already increased to seventy head.—*Westminster Gazette*.

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ADDITIONAL NOTES ON THE BIRDS OF LLEYN.

By O. V. APLIN, F.L.S.

As I was anxious to pay another visit to the small islands called Ynys Gwylan fawr and Ynys Gwylan fâch, and in fine weather if possible, I arrived at Aberdaron on the 27th May, 1902. But for two whole days the wind, that curse of Lleyn, blew so hard that it was impossible to get out in a boat, and the Bardsey men who came across early in the morning of the 28th were weatherbound. The third morning, however, was calm, and we got off soon after 7 a.m. There is a small breeding colony of Guillemots and Razorbills on the larger island, and some Shags breed, as also on Trwyn y Penrhyn, off which the islands lie. Puffins breed on both islands, as I suspected; the eggs were fresh, but much discoloured on account of recent rain making the birds' feet muddy. I found the nest of the Great Black-backed Gull in exactly the same spot where I found it two years before. It contained two eggs. There was no built-up nest such as the Herring-Gull makes, but merely a depression in the ground among the scurvy-grass, nine inches in diameter, and four inches deep, with a few bits of scurvy-grass at the bottom. At the side of the nest lay a casting, half as large again as a golf-ball, composed apparently entirely of Puffins' feathers! The deep-toned husky "caow" of the Great Black-backed Gull is a very impressive bird-sound, as also the angry "gag gag gag." Another pair inhabiting a stack off the mainland had possibly

been robbed of their eggs ; they had none the next day. I found on the smaller island a substantial Gulls' nest, just like that of a Herring Gull, built of grass, scurvy-grass, &c., containing two very small oval eggs with streaky markings. I examined all the Gulls I could see very carefully, but could not detect *L. canus*, so I came to the conclusion that the eggs were abnormally small Herring-Gulls' eggs, and took them ; but when I blew them I found that they contained yolks of a deep rich golden yellow (almost orange-yellow), whereas the yolk of Herring-Gulls' eggs is of a pale yellow. I have only taken the eggs of the Common Gull some years ago in Norway, and I forget the colour of the yolk, but I am told that it is dark and richly coloured. The eggs in question, however, have the shape and appearance of Herring-Gulls' eggs, and are not in the least like the usual type of Common Gulls' eggs. Rock-Pipits were common on the islands.

Wishing to make the most of the fine weather, I left for Abersoch in the afternoon, and on arriving there at once went out to St. Tudwal's Islands. It was lucky I did so, for the next morning one could not have landed on them. I found a little flock of eight immature Turnstones on the rocks. There were some grand old Cormorants on the larger island, but I cannot make sure if this bird breeds on the cliff or not. Shags were still on their nests, and there were some full-grown brown Shags and light-bellied Cormorants about. All, except the old Shags at the nests, flew out in a body, and settled on a low rocky islet. The Razorbills and Guillemots had laid a good many eggs, which they were loth to leave. A Herring-Gull carried off a bright green Guillemot's egg just as our boat came up. It settled with its booty on some low rocks at the foot of the cliff, and, as the boat was going fast, I was in time to frighten the Gull away, when we got the egg ourselves. The appearance of the Gull carrying off this huge bright green egg was most curious, and, strange as it may seem, the Gull had grasped the *big* end of the egg between its mandibles. The egg is now before me, slightly indented on one side at its largest diameter.

All these islands are really very pretty at this time of the year. The thrift (*Armeria maritima*) is flowering so thickly in places as to produce sheets of pink, and the dark rocks are often varied by great splashes of a close-growing light yellow lichen ; rich

green grass and masses of bright green *Cochlearia*, and clumps of white-flowered campion, all contrasting with the blue sky and sparkling sea of a fine sunny morning, and enlivened by crowds of birds, make up a most fascinating scene.

I devoted the two windy days to going round the cliffs and over the "mountains" about Aberdaron, although the gusts were sometimes so furious that it was impossible to stand up. The eastern cliffs, though often nearly sheer, are comparatively low, and, being sheltered partly by the land, are often luxuriantly clothed at the top with gorse, bramble, &c., and even clothed with ivy. Kestrels, Pigeons, and Crows nest along them, and the Heron is believed to have bred in one spot; the Barn Owl also occurs. But the great cliffs on the west have a beauty and grandeur of their own; their long steep sides sweeping down to the sea are partly grassy, lined with tiny sheep-paths, and partly clothed with long heather. At the foot are shelves of grey rock brightened with dashes of yellow lichen, and in spring gay with pink thrift where they merge into the grassy cliff. The cliffs end with a broken outwork of jagged rock, or sometimes form a perpendicular or overhanging rock-face, with an occasional hollow or cave inhabited by Shags. There is a small colony of Guillemots, Razorbills, and Shags in the steep cliff and cave at Porth Felen, and another at Pen y Cil. Herring-Gulls are to be seen where the jagged rock joins the green cliff, and doubtless breed here and there all along the coast in small numbers, as also do Oystercatchers. The upper and exposed parts of Mynydd Mawr and Mynydd Annelog are barren and wind-swept, sparingly clothed with short heather and wiry grass, but strewn with weathered stones; and all around the naked rocks—the bare bones of Lleyn—peep out. Bird-life is very scanty. An occasional Meadow-Pipit or Wheatear, a pair of Kestrels, and Jack-daws, of course in numbers, may be seen; but I watched a Raven sitting on a stone half-way down the cliff, and caught sight of a Merlin as it skimmed over the top.

This is an old breeding haunt of the Chough. There are six eggs in the Wolley collection, taken, according to Mr. Wilmot's MS. catalogue in the Cambridge Museum, "on a mountain in Aberdaron in Carnarvonshire called Mynydd yn Nyclog, opposite to Bardsey Island," in 1852, and another, probably from the same

place, taken in 1846 (*vide* 'Ootheca Wolleyana, part ii. p. 472). There is no mountain of this name at Aberdaron, and it does not look like a Welsh name. Probably Mynydd Annelog was intended. I doubt if there are more than a couple of pairs of Choughs now remaining all along this piece of the mainland coast. What becomes of the young birds, which are undoubtedly reared, is somewhat of a mystery.

A pair of magnificent Great Black-backed Gulls looked exceedingly well on a green-topped stack at the foot of the great cliffs looking out towards Bardsey, but there were no eggs on the stack. In one or two places among these barren storm-swept mountains a little deep cwm runs in from the sea, with a trickling stream at the bottom. These green cwms are so rich and lush that the contrast is striking. Deep in the good grass which makes Lleyn's early lambs famous, they stand in spring so thick in places with primroses in full bloom that one literally cannot walk without treading on them. The bracken-fronds are then just uncurling, and exceptionally tall spikes of the early orchis make beds of deep purple to delight a gardener's eye. From the top of Mynydd Annelog most of Western Lleyn is spread out before you. Northward lies a huge chessboard of banked fields, brightened up by golden gorse and white-walled grey-roofed farms, with perhaps a few low trees to shelter them. Small as these clumps are, they are sometimes sufficient for the Green Wood-pecker (which I have seen close to Aberdaron), the Tree-Pipit, and Willow-Wrens. Where the plantations are more extensive, as about the beautiful old house Bodwrdda, with its adjacent stream and tiny valley, there are numbers of Wood-Pigeons and Mistle-Thrushes, Song-Thrushes (not common in the district), Chiff-chaffs, Greenfinches, Spotted Flycatchers, Sedge-Warblers, &c. The Goldfinch, too, breeds. About the banked fields the Corn-Bunting skirls, and the Yellow Bunting is a very common bird. At the back of Mynydd Careg there is quite a little wood, harbouring the most westerly rookery; the Rooks, however, are very little seen at Aberdaron. The next rookery I know, going east, is at Sarn. In the middle distance is the dark brown mound of Mynydd Ystum (400 ft.), with Castell Odo, and beyond it the high moorland of Rhos-hirwaen. To the right is the wall of barren-topped hills stretching inland from Rhiw at the corner of

Hell's Mouth. It is said that of a great pack of Red Grouse which were driven from the East Carnarvonshire mountains in severe weather some five years ago, and settled down on these hills, a few remained to breed, and still do so.

I went to Nevin to examine the bird-life at the Bird Rock (*Careg y llain*, the "Rock of the Leap"). It is a remarkably fine bird-station; a big nearly perpendicularly-faced flat-topped buttress of rock, grey and pinkish on its face, and green-sided, standing conspicuously out from the graceful line of the coast. This grey rock-face is splashed with yellow lichen, and varied with patches of brilliant ivy, light green fern, and grassy ledges with bluebells, campion, and thrift. A jutting elbow of bare rock is washed white, and lined with rows of Guillemots and dotted with Razorbills. About the top and a little way down Herring-Gulls breed. Then comes a cliff-face with ledges occupied by a very large colony of Cormorants—scores of fine old birds streaming out over the sea one day when a boy rattled stones down from the top. Razorbills also are dotted about this front. Below again are crowds of Guillemots, and lowest of all (except one row of Guillemots) a vast crowd—thousands perhaps—of Kittiwakes, which come out like a snowstorm when they are alarmed, while their cries of "kitty-wayke" break forth at times into a volume of sound. On the south side there is a low rounded green-topped cliff, frequented by the Kittiwakes and more Guillemots and Razorbills; and beyond that another small cliff, on which are many Cormorants, and a few Razorbills, Guillemots, and Kittiwakes. Off it are two stacks with a few Herring-Gulls on the inner, among the masses of thrift; on the outer a lot of Gulls and Cormorants were sitting about, but not nesting. In the face of the great cliff there is a high cave or hollow, in and out of which Shags were passing. Fifteen species of birds inhabit the cliff, if we include the Rock-Pipits, the Wrens, whose song resounded among the rocks, and small blue Pigeons, five of which passed, unfortunately overhead, and did not give me a sight of their backs. I have good evidence that at least twelve of these (without counting the Pipit and the Wren) breed there, among them the Barn-Owl. Along the coast between Nevin and the Bird Rock are little green pastures, divided by banks and grey stone walls, sloping down, to drop finally in a green broken

cliff, often thickly starred with primroses ; brightened here and there with the gorse so characteristic of Lleyn. But the fields are valuable and kept clear of it ; they were in May strewn with daisies and buttercups, and stood thick with grass in which Corn-crakes were calling ; for this is as warm and forward a bit of land as any in North Wales, sheltered by the mountains from the only cold wind which ever blows here (N.E.), and hardly knowing frost. Nevin itself is blessed with a very mild soft climate. Some strong robust plants of *Primula japonica* in full bloom (a plant which likes a mild moist climate, and one I can never keep long at home) were growing in perfection in the inn garden, and would have excited the envy and admiration of any gardener. Potatoes had already been dug in the third week in May. This soft climate and broken gorsy ground is very favourable for the Stonechat, of which I have seen seven pairs in a day's walk, and small birds generally. The most noticeable are the Corn and Yellow Buntings, Blackbirds, and Whitethroats.

The song of the numerous Blackbirds is quite a feature of the country about Nevin and other parts of Lleyn, as also in the numbers of the birds one sees. The Song-Thrush, on the other hand, is by no means very abundant. The Sedge-Warbler is very common on the coast about Nevin, among any bit of cover not absolutely dry. In the interior of Lleyn, on the road between Nevin and Chwilog, there are some considerable woods, and the country is generally richer and more luxuriant than it is nearer the coasts. We find big hedgerows, willows, orchard-trees, and some little hedgerow timber. I noticed the Tree-Pipit more than once, and the Wood-Wren, Chiffchaff, Green Woodpecker, Mistle-Thrush, and many of the ordinary woodland birds.

Beyond the Bird Rock comes a green gorsy bwlch, and then the great dark mass of Yr Eifl, with Vortigern's green valley gouged out of it, comes down to a shallow sheltered bay and a blue sea subject to squalls from the mountains. Out across a bit of blue bay the coast of Anglesey, from the sands of Newborough Warren to the rock of Holyhead, is marked by a line of pale yellow sand dividing the dull grey of the land from the soft blue sea. But the Terns which breed there do not, for some reason, like the shores of Lleyn. Like all Lleyn mountains, the peaks of Yr Eifl are barren, their tops being little more than a

waste of grey weathered rock. Lower down their sides are covered with short heather and moss, or, in the sheltered parts of their inland slopes, deep heather and dwarf gorse. They are not high enough to be very wet, or to have the spongy moss bogs one knows so well in Merioneth. Only two peaks are to be seen from the top of the Rock, the highest and that whose supplementary crag drops into the sea. Trer Ceiri lies out of sight behind the biggest. I saw no Grouse on them this year, and could not find the Twite. Ring-Ouzels were about, just below the upper masses of rock. There were also a few Stonechats, Wheatears, and Meadow-Pipits, and Wrens in the rocks. Peewits may be seen lower down. But the Peregrine Falcon finds this bit of moorland worth hunting, for I have seen him come from it heavily weighted with some booty or other.

I have been able to get some useful information about the birds of Western Lleyn from two men, who, although they did not know the English names of the birds, are keen and accurate observers of the ways of the birds about them. One of them was very quick in picking out those he knew from Mr. Howard Saunders's 'Manual,' which I always find so useful in this way. Mr. G. H. Caton Haigh has also given me some valuable information, especially about the eastern end of the district, enabling me to add considerably to my list; and I have also to thank Mr. Forrest for some notes.

I have added the following species to my list of Lleyn birds, besides some ordinary winter visitors omitted here, which will be included in the notes I made during a visit paid to Lleyn last winter:—

REDWING.—Sometimes strikes against the St. Tudwal's lighthouse.

BLACKCAP.—On the 24th May I heard at least three singing in the Bodfean Woods, and saw one. Mr. Coward and I have visited these woods previously without being able to find the bird; and I should have thought it possible that the Blackcap, which was unusually abundant in its usual haunts in 1902, had chosen this year for pushing its range further west into Lleyn had not Mr. Caton Haigh informed me that he had found it fairly common in the woods and gardens at Broom Hall (east of Pwllheli), and that he had also heard it at Bodfean. I think the Blackcap is very locally distributed in Lleyn, and that it is probably (at present) only fairly common in certain years.

LONG-TAILED TIT.—I saw a pair apparently breeding near Bodfearn Church on the 24th May. Mr. Caton Haigh tells me it is common in the plantations and gardens at Broom Hall, east of Pwllheli.

KINGFISHER.—Mr. S. G. Cummings kindly tells me he saw a pair at Edeyrn in August, 1901.

BARN-OWL.—This bird was well described to me as haunting the cliffs about Porth Mendwy and the Bird Rock, where it is said to breed. An amusing description of it was given by one man, who began by saying there was a bird with a face like a cat.

LONG-EARED OWL.—Mr. Caton Haigh tells me that he has seen a good many in the fir-plantations and park at Broom Hall.

SNOW-BUNTING.—Mr. Caton Haigh has only seen one in the district, *viz.* a bird in immature dress, which flew in at a window in Broom Hall, and was kept alive for some time.

QUAIL.—Mr. Caton Haigh has only once met with it in Lleyn, *viz.* a single bird in a turnip-field at Broom Hall in September, 1900; but Mr. C. Lloyd-Edwards, of Nanhoran, told him that it had often been shot on his land.

Rock-Dove.—The Welsh name given to me for this bird is “Yscythan” (the Ring-Dove being “Colomen y coed”). Well known to one of my informants, who took eggs this year. I searched the locality with him between Porth Mendwy and Pen y Cil, on the 28th May. We saw some Pigeons flying out of the cliffs, but they all had blue backs. My companion, however, insisted that there were some with white on their backs; and presently I had a good view of what were, as far as appearance went, a pair of genuine Rock-Doves. I saw five small blue Pigeons at Bird Rock, but they flew directly overhead, and I could see only their under parts.

GREY PLOVER.—Mr. Caton Haigh writes that it is often to be seen on the shore at Afon Wen in winter.

SANDERLING.—I saw two on the shore east of Pwllheli on the 21st May, 1902; they were immature birds in partial summer dress, with white under parts.

BAR-TAILED GODWIT.—I saw two immature birds on the shore west of Pwllheli on the 26th May, 1902.

TURNSTONE.—One on the shore east of Pwllheli on the 21st May, 1902, and eight on St. Tudwal’s Island on the 29th,—all in immature dress.

Woodcock.—Plentiful at Aberdaron and on Bardsey Island in very severe winters. About the middle of March, 1908, Mr. Caton Haigh, when fox-hunting, put up a good many at Llanbedrog and on Carn Madryn, which were probably on migration.

JACK-SNIPE.—"Myniar." Occurs in winter about Aberdaron. One seen in November, 1902.

GREENSHANK.—Mr. Forrest mentions that Mr. Day told him that this species is rather numerous on the flat coast west of the mouth of the Dwyfawr, and that he had shot six at different times.

KNOT.—The same gentleman, in severe weather early in 1895, saw a very large flock of Knots on the same coast, and shot several birds.

STORMY PETREL.—Known at Aberdaron as appearing at sea in changeable weather. The searches I have made for breeding birds have not at present been successful.

SHOVELER.—Mr. Caton Haigh tells me that an adult drake was shot on a pool on Pen y chain in the winter of 1900-01. Mr. Forrest saw, while they were in the hands of a birdstuffer, a duck and drake, which he subsequently learned were killed close to Pwllheli in the second week in December, 1902, where they had been met with previously.

PINTAIL.—Mr. Caton Haigh once saw a small flock of these Ducks on the Afon Erch, but did not shoot one.

PIED WOODPECKER.—I repeatedly heard the loud rattle of this bird in the Bodfean Woods on the 24th May, 1902, but could not get a sight of the birds, as I did not like to go into the woods at that spot. I have always expected to find this species in the Lleyn Woods, and Mr. Caton Haigh thinks he has seen it in the district, and that it has bred in the woods at Broom Hall; Mr. Lloyd-Edwards, of Nanhoran, told him that it was rare there.

WHITE WAGTAIL.—On the 18th April, 1898, Mr. Caton Haigh saw a party of about seven or eight on the seashore at Afon Wen. I have seen it on the Merioneth shore in May.

WATER RAIL.—There is a stuffed Water Rail in a public-house near Pwllheli; killed at least thirty years ago, and doubtless a local specimen. Mr. Caton Haigh has seen this species in the marsh between Pen y chain and Pwllheli, but thinks that it is rather scarce.

BITTERN.—Mr. Caton Haigh tells me that one was picked up in a disabled condition in the marsh not far from Abersoch Station, and is preserved at Broom Hall; and that two are said to have been seen by the lake at Glasfryn, he thinks, in 1900.

WHOOPER.—He also tells me that the Whooper has visited the pools at Afon Wen several times.

BEAN-GOOSE.—Also that he saw a Bean-Goose there on the 20th October, 1898, and that there is a local specimen preserved at Broom Hall.

I have made the following further notes on species mentioned in my former papers :—

DIPPER.—I saw a Dipper in the Afon Rhyd-Hir, near Hendre pen prys, on the 26th May. On the coast near Aberdaron there is a little narrow cwm where the Afon Saint comes down, emerging from a tunnel, partly natural, into a narrow chasm with a tall ivy-clad rock-face on one side. It is a very pretty place with luxuriant vegetation, the rocks being decked with clumps of hart's-tongue fern and gigantic plants of the wall-pennywort (*Cotyledon umbilicus*) a foot or eighteen inches high. The sides of the cwm spread out into broken ground lower down, overgrown in parts with gorse and bramble bushes, a favourite haunt of the Red-backed Shrike. The Dipper has often nested inside the little tunnel; also in Aberdaron Mill, and this season at a spot some way up the Afon Fawr. Mr. Cummings tells me he saw Dippers on the Afon Geirch, near Edeyrn, in August, 1901; and Mr. Caton Haigh says it is common on the Erch, and that he has seen it in the Bod-y-groes river, and once in a little ditch near Coed Rhos fawr. Nevertheless the Dipper cannot be called a common bird in Lleyn, and you can go about the country a good deal without seeing one, a thing you can hardly do in some parts of North Wales.

GREY WAGTAIL.—This also bred in the chasm at Porth Saint, on shelves in the rock, for several years; but this season the birds had probably changed their nesting-site for some spot in the ivy-clad cliff. I saw a full-fledged young one there.

RED-BACKED SHRIKE.—I saw a male perched on the bramble bush in the upper part of the cwm in which I found the nest the year before; also a pair about the foot of Mynydd Mawr, and another pair not far off near the most westerly farm, close to Gwddel Moch, which had a nest ready for eggs in some bramble on the top of a bank dividing two little fields. This bit of country has a warm aspect, being sheltered by Mynydd Mawr, and the broken ground is well clothed with gorse and brambles. I also saw a female Shrike at Nevin. Mr. Cummings has seen a pair with young at Aber Geirch, near Edeyrn, on the 1st August, 1901.

GOLDCREST.—Seen at Bodfean and Llanbedrog. It has been known to strike against the lighthouse on St. Tudwal's.

WHINCHAT.—Quite uncommon. In 1902 I only saw two, both near Nevin. Mr. Cummings saw one at Abersoch in June, 1901.

BULLFINCH.—Not common. A pair at Bodfean.

COAL-TIT.—One at Bodfean.

TREE-CREEPER.—Bodfean.

RING-OUZEL.—Seen again on Yr Eifl, just below the mass of loose rock of which the top of the largest peak is formed. The wings and legs of two which struck St. Tudwal's Lighthouse on Sept. 14th, 1901, were sent to me.

HEDGE-SPARROW.—I find this is quite common.

WOOD-WREN.—In addition to localities mentioned in former papers I noticed it in Coed Rhos fawr between Nevin and Chwilog.

LESSER REDPOLL.—Mr. Cummings tells me he saw one or two near Abersoch in June, 1901; this is the first record I have of the bird in Lleyn in summer.

STARLING.—On the 16th March, 1902, a large flock played round the light on St. Tudwal's nearly all night. There were thousands of them. The keeper, going out on the gallery, was soon covered with the birds. A visitation of this magnitude he had never known previously, although the Starling strikes the light more frequently than any other species.

NIGHTJAR.—Fairly common. I heard two at once at the foot of Carn Bodfean, and another at Abersoch. Mr. Cummings found the young just hatched at Abersoch in June, 1901.

GREEN WOODPECKER.—Quite a common bird in Lleyn. Very common in the Bodfean Woods. I heard one hard at work inside a tree, and waited until it put its head out of the hole, perhaps to rest and get cool, as it remained with its head out for several minutes. I noticed birds at Llanbedrog, Coed Rhos fawr, Nanhoran, and Nevin, and even in a little clump of trees standing by a farm at Llanllawen, near Aberdaron, the most westerly spot in Lleyn that it could well inhabit in the nesting season. It would, indeed, be unusual if in May one passed down that glorious road which with gentle windings sweeps along the Nant of the Horan, now between belts of varied woodland, now hemmed in with steep ferny and heathery heights capped with Carn Saethon and Carn Anneddol (haunts of the Kestrel) without hearing the laugh of the Green Woodpecker. When last I passed down the Nant, which reminds one of parts of the Ardennes, a thick cold mist was drifting through it, but even then its charm was strong upon me. At Nanhoran itself, too, where the wild hyacinths make the woods in May a sheet of blue, the Woodpecker's cry, mingled with the Wood-Wren's shiver, the song of Blackbirds, and the ringing note of the Chiffchaff is often to be heard. The green park-lands here, where Pheasants feed out at the wood-edges in the evening, present a strange contrast to the bare wind-swept country around.

MERLIN.—Two nests were found this year on sea-cliffs, and I saw a bird on Mynydd Annelog in May. One nest was at a place where the

cliff was in ledges ; it was near the top of the cliff, in a little hollow. The other, which contained three eggs on the 19th May, was on a little ledge on a sloping buttress of rock, not far down, at an elbow in the cliffs. The male Merlin sits on the eggs, as was proved in another part of Wales.

PEREGRINE FALCON.—I visited a breeding pair which had an eyrie in an inaccessible place—a squarish hollow or cave, with sheer rock-face below, and overhanging rock above. There was a good growth of rich green grass at the mouth of the cave, and two big stones which made it more difficult to see in. The young appeared to be hatched. I also knew of another eyrie with young.

SPARROW-HAWK.—Not common. Mr. Cummings saw one on several occasions at Edeyrn in August, 1901. Mr. Caton Haigh has often seen it in the woods at Broom Hall, but remarks that it is not so common as in most parts of England. He noticed several coming in to roost in the woods at Nanhoran about the middle of March, 1908.

STOCK-DOVE.—Several about the Bodfean Woods. I had in the previous year seen it inland between Sarn and Abersoch.

RING-DOVE.—This is much more abundant than I had supposed. It is very numerous about Bodfean. Here at the foot of the Carn are the tallest trees (conifers, &c.) I have seen in Lleyn ; tall trees also grow in the humid belt of woodland which follows the course of a streamlet there, where laurels and rhododendrons grow to a great size. Numbers of Ring-Doves, too, are to be seen at Nanhoran, and again east of Pwlheli, in the neighbourhood of Broom Hall. I noticed a good many up one of the little valleys running inland from Aberdaron, where I saw ten flying together in May.

RED GROUSE.—(Iar Mynydd). About four or five years ago, in very hard weather, I am told that some hundreds of Grouse came to Rhiw, and many of them went on to Bardsey. From the latter they soon disappeared, but some stayed on Rhiw and bred, and a few are said to do so still (1902). They were doubtless driven off the high Carnarvonshire mountains by deep snow.

COMMON SANDPIPER.—Mr. Cummings saw a pair near Porth Caered, 19th to 28th June, 1901. I have no doubt that the birds breed in Lleyn, although the eggs have not yet been found.

SNIPE.—I believe breeds in some marshy ground near Aberdaron, where it is common in winter. In hard weather Snipes are trapped at the springs on Bardsey.

COMMON TERN.—Mr. Cummings has seen them when Mackerel fishing off Trevor, 7th September, 1895—no doubt birds from Anglesey. I have often wondered why this bird and the Arctic Tern do not breed in Lleyn.

HERON.—Mr. Caton Haigh informs me that the herony at Broom Hall, near Pwlheli, consists of about fifteen or twenty nests, and that there is another small herony of six or seven nests at Gwyn fryn, just on the eastern borders of the district. A pair of Herons are believed to have bred (though the nest was not seen) in the cliffs near Porth Mendwy, where the cliffs are much overgrown with ivy, bramble, &c.

GANNET.—Often seen off Aberdaron in the Mackerel fishing season. Mr. Cummings has seen them off Trevor in September, 1895.

PUFFIN.—The Puffins were late in coming to St. Tudwal's in 1902, not having arrived by the 1st April. Razorbills and Guillemots came on the 10th March, about the usual time. With reference to my remarks on the published illustrations of the Puffin, in which it is represented in a wrong and the right attitude, I should like, in justice to the artist and publishers, to call attention to the coloured plate in Cassell's (Brehm's) 'Book of Birds.' On this plate the Puffin is correctly depicted standing upon its feet (popularly so called) alone, with the tarsi nearly upright. Messrs. Cassell have been good enough to inform me that the book was published in 1870-2, and that the plate was drawn by Mr. F. W. Keyl. This then is the earliest correct illustration (after Willughby !) of the Puffin in English books with which I am acquainted. When I wrote my former paper (Zool. 1901, p. 147) my copy of Donovan's 'Nat. Hist. of British Birds,' 1794, was in the binder's hands, but I may as well say now that he too drew the Puffin (plate viii.) resting on the whole length of the tarsi.

MANX SHEARWATER.—I think the mass (two big handfuls) of short grass one finds (in some cases) in the breeding-holes is collected by the birds, for I found in one occupied hole bits of green grass which had been gathered not more than twenty-four hours before at the most.

LESSER BLACK-BACKED GULL.—Not at all common. I saw one adult bird at Pen-y-chain on the 21st May.

THE BIRDS OF DUNGENESS.

BY THOMAS HEPBURN.

A FORTNIGHT or more spent in the vicinity of Dungeness Beach enabled me to considerably amplify the notes which I made in 1900 on the birds of this interesting district. Making my headquarters close to Rye, I extended my walks over the whole of the beach, and over a much larger portion of the marsh on the landward side than I did before, including also the stretches of beach and marsh close to Rye on either side of the estuary of the Rother.

A line drawn from a point on the coast somewhat to the south of Littlestone, through Lydd to Jury's Gap, would cut off a triangle of land, with Dungeness Lighthouse at its seaward apex, enclosing practically the whole of Dungeness Beach proper—an area of land sometimes two or three miles wide, which is almost entirely covered by a deposit of pebbles. To the north and west is the marsh country, but the dividing line between the marsh or grass land and the shingle is of course much broken up, narrow points of grass land running into the beach; and occasionally a long strip, generally with a big ditch, or sewer, as it is called, running in the centre of it, makes a narrow gap through the pebble country right up to the sea-front.

I do not know whether there is any scientific explanation or reason why the sea should throw up a huge collection of pebbles at particular spots on our coast. In the case of Dungeness it has evidently been the work of a lengthened period of time, and there are distinct ridges, roughly parallel to the coast-line, which show how the sea has been gradually receding and leaving behind it the banks of shingle. The more ancient of these ridges, where they have been undisturbed, are becoming covered with vegetation, which generally grows most freely on the crests. In some parts this vegetation consists of stunted blackthorn, sloe, and broom bushes, which all seem to be trying to learn how to grow

horizontally ; in other places there are considerable clumps of holly and elder bushes, trimmed off to a regular shape on the seaward side by the wind. On the outskirts of the beach there are many patches of gorse, which give a vivid mass of yellow when they are in bloom ; and the sombreness of the beach is otherwise relieved by beds of thrift and numerous solitary fox-gloves, and nearer the sea by thriving plants of sea-holly and horned poppies with their yellow blooms. The more recently formed ridges are all beginning to show a faint tinge of green, caused by straggling blades of fine grass, which must obtain what nourishment they need from the decomposition of the minute lichen or moss with which most of the stones on the surface of the beach are covered. This scanty beginning of a soil is added to year after year by the dead grass-blades, until there is a sufficient collection to give growth to larger plants. Apart from the birds, the chief living wild creatures to be seen on this waste of stones are Hares, which are numerous, a few Rabbits, and a good many Grass-Snakes.

The expanse of marsh land stretches back for miles, its limits being almost accurately defined by the military canal, which runs from Hythe to Rye and Winchelsea. This marsh land is a perfect network of ditches, which drain off and carry away the surface water from the soil, emptying themselves into bigger channels (generally called "sewers"), which in their turn empty themselves through sluice-gates into the sea. Many of these sewers run through low-lying flats, where they spread out beyond their banks, forming swampy places often overgrown with reeds, and making a favourite haunt for Wild Ducks, Moorhens, Coots, and Dabchicks. There are not many roads in this marsh, and where the ornithologist finds most to interest him there are no roads at all, so that he often has practical proof that the shortest way home, after his day's tramp, is a very long way round, owing to the difficulty of finding the various planks and foot-bridges by which to cross the ditches and sewers.

From Jury's Gap to near Rye the marsh land runs close up to the sea-front, a large tract of sand-hills forming a barrier between it and the sea in one part, embankments and the ridge of pebbles thrown up by the tide protecting it elsewhere. In these sand-hills, the fishermen tell one, Sheld-Duck used to nest years

ago, but golf-links, with their accompaniment of numerous sharp-eyed caddie-boys, do not make them a very desirable breeding-ground for birds at the present day.

On the east side of the mouth of the Rother there are some small stretches of shingle, and on the west side there are some larger ones, but in neither case approaching in any way the extent of the beach at Dungeness ; and, owing to the proximity of Rye and Winchelsea, they are not nearly such an interesting hunting-ground for the ornithologist as the large beach surrounding Dungeness Point. It may be as well to say that the physical difficulty of walking for a day over this loose shingle is a considerable tax upon one's powers, and that it is the best plan to make use of the wooden "back-stays" used in the locality, by means of which one is able after a little practice to acquire a sliding movement over the surface of the beach, and to attain a greater speed at a less cost to one's shoe-leather, as well as one's muscles, than one would by attempting to walk in the ordinary way.

It is the large expanse of pebbly beach near Dungeness Lighthouse which forms the stronghold of the Kentish Plover (*Ægialitis cantiana*), and the Stone Curlew (*Ædicnemus scolopax*). Neither of these two birds is to be seen at the present day, on the smaller patches of beach on either side of the mouth of the Rother near Rye. The colonies of the Common Tern (*Sterna fluviatilis*), and the Little Tern (*S. minuta*), are also to be found only on the Dungeness Beach ; for, although I often noticed individual birds of both these species feeding along the river and in the ditches in the vicinity of Rye, as far as I could make out they did not take up permanent quarters on any of the stretches of shingle there. The Terns had hardly begun to lay in any numbers before I left. The earliest date on which I heard of the Common Tern's eggs being found was May 16th, and I saw some myself on the 18th May, and on that date I also saw some Lesser Tern's eggs, but in neither case were there more than one or two eggs in a nest. I suppose there is a possibility of a few Arctic Terns (*S. macrura*) breeding on the beach. I watched a pair of them for some time one afternoon fishing in the outer bight of a kettle-net. They came so close to me that I was plainly able to distinguish the grey colouring of the breast and flanks.

The Kentish Plover, notwithstanding all vicissitudes, seems to hold its own, and I think I am safe in saying that there were as many birds breeding on the beach in 1902 as in 1900. My fisherman friend, whose acquaintance I made on the occasion of my former visits, gave me some interesting information as to the numbers and distribution of this bird on the beach. During a morning's walk with him we saw two pairs of the birds, and he told me that he knew at that time of three other pairs in different parts of the beach. He also said that he had been recently watching twenty or more birds of this species feeding in small mobs on Romney Sands, which he considered to be last year's birds and non-breeders. The previous autumn (1901) he told me he had counted forty birds in one flock, which were no doubt getting together preparatory to leaving this country.

My companion had on the previous day (15th May, 1902) found a nest belonging to one of the pairs of birds we had just seen. On walking towards it we saw one of the old birds rise about thirty yards from us, and it was almost immediately joined by its mate, and both birds flew away quickly out of sight over a ridge. After looking at the nest we concealed ourselves in a hollow, from which we could watch the spot where the nest was. In about ten minutes a single bird came back and settled on the beach not much more than ten feet from the nest. After a succession of short runs, several of which were made in reverse directions, it stood for a few moments quite still (actually not more than twelve inches from its eggs), and then with a short quick run settled on them. It was such a dull day that it was most difficult to distinguish the bird as it ran over the pebbles, and when it settled on its eggs it disappeared from my sight altogether. We then again walked towards the nest, but I failed to detect the bird move from its eggs, and only caught sight of it when it took wing about ten feet away from its nest. The nest contained three eggs, which I noticed were not all with the pointed ends to the centre, and was situated on the crest of the ridge of pebbles. The nest hollow was scratched out close to a mossy patch of stones, and it was thickly lined with short broken pieces of rotten twigs and sticks. I think this lining of the nest with vegetable matter is unusual. The hollow measured 3 in. diam. by $\frac{3}{4}$ in. deep.

On the 19th May I was rather surprised to disturb three Kentish Plovers feeding along the edge of a swamp three miles inland. There was no doubt about them, as I had a good view of them through the glasses, and could see the broken pectoral band. On the 20th May I was watching a pair for some little time on the beach near Littlestone. As it was a bright sunny day I found them comparatively easy to follow with the glasses. Occasionally they came so close to me that I was able to distinguish all the details of their plumage. They have a whistling call-note, which is not unlike that of a Ringed Plover abruptly cut short in the middle.

I should say that the Stone Curlew was, if anything, more numerous than in 1900. I saw during my stay nine birds in distinctly different parts of the beach. The fisherman, mentioned above, told me that he had seen in the course of two days birds of this species which he considered represented twelve distinct pairs. (This was during the time of my visit.) And that during the previous autumn (1901) he had counted forty-eight birds in one flock, and had also disturbed numerous single birds close to where he had seen the large flock. From information given me by him and others, I counted that at least six clutches of eggs had already been taken on the beach that season. (May 16th, 1902.)

I spent some time watching one of these birds, which I found on the 5th May sitting on a single egg. The bird rose from the beach, close to a patch of broom and mossy ground surrounded by shingle, when I was about fifty yards distant from it. I found afterwards that it must have risen right off its egg. It flew away close to the shingle, and after it had topped the first ridge of pebbles I did not see it again, although I heard two soft whistles a little while afterwards. The nest hollow was scratched out close to a dead broom bush, in a spot where earth and pebbles were mingled together. I visited the nest again on the 7th May, this time coming up to it from a different direction where some furze bushes gave a little shelter. When about forty yards distant I saw the bird move off its egg, run a few yards, and then crouch down on the beach. On my standing still and looking at it through the glasses it flew away, never rising more than five feet above the surface of the beach, and flying with very little

movement of its wings. This time I kept it in sight until it settled about two hundred yards distant, and ran away amongst some broom bushes. This was at 11 a.m. At 3 p.m. I passed the nest at some distance on my way home, and saw the bird rise, apparently right off its egg, and fly away as before. On the 9th May I again looked at the nest. As I came up the bird ran off its egg, and crouched down as before. On this occasion, it being a dull cloudy day with a very bad light, the protective powers of the colouring of the bird were strikingly exemplified, for as soon as the bird crouched it seemed to disappear from sight. It allowed me to come within ten yards of it, at which distance I was still unable to distinguish it until it moved, although I was looking at the actual spot from which it flew. As I had good reason to suppose that the nest had been found by some boys, and was not likely to be left any longer undisturbed, I took the single egg. It is possible that there is some truth in the general idea amongst the men on the beach, that if a Stone Curlew has its first clutch of eggs taken, its second clutch will consist only of one egg. This egg was already showing decided signs of incubation, and it is probable that this bird would have laid its second egg at a shorter interval than six days if it had been going to lay two eggs. The hollow of the nest was now much more trodden down than on the first day I saw it, and pebbles had been scratched into it and trodden into the earth, making a smooth paving of stones over the whole of the depression, which had also some small twigs of dry broom lying in it. The Stone Curlew seems rather to favour the landward side of the beach where grass and pebbles intermingle, or, if they are seen more to the centre of the beach, it is where there are strong patches of broom and gorse growing on the shingle.

Redshanks (*Totanus calidris*) were fairly numerous, and Lapwings (*Vanellus vulgaris*) and Ringed Plovers (*Aegialitis hiaticola*) were both very numerous. The latter are well distributed all over the beach country, and are quite as numerous on the shingle near Rye as at Dungeness. I spent much time in observing both the Lapwing and Ringed Plover, and began to consider myself, towards the end of my visit, quite an expert in watching them on to their eggs. Their behaviour when they have eggs is somewhat similar. We may take one instance as an example: I started

watching several Ringed Plovers that were running about on the pebbles, and by a piece of good luck I happened to concentrate my attention on a bird that was the possessor of a nest and eggs. After a short interval all the birds except the one I was watching flew away. After it had been left alone about ten minutes it started running over the shingle, going along for short distances, and stopping a moment or two after each run ; when it had gone thirty or forty feet all in one direction, it turned and went back in almost the same direction as it had come, taking some fairly long runs without stopping ; then, with a short run of about twelve inches, it settled on its eggs, only its head and neck being visible to the observer. When I rose from the pebbles and walked towards it, I had not walked many paces before I saw it crawl (it is the only word to properly describe its stealthy movement) off its eggs, and run as hard as it could over the ridge, only to be visible again when it took wing. After a short search I found the four eggs in the nest hollow. I watched the same bird on and off its eggs several times, and found that it invariably returned to its eggs by a devious course, and when disturbed it always ran a few feet before taking flight. Sometimes the eggs were all with the small ends pointing to the centre, at others they were lying in irregular positions. This seems to tend to prove that the sitting bird makes a point of arranging its eggs with the points to the centre, but that occasionally when leaving the nest hurriedly it disturbs their position.

The same day (May 10th) I caught some nestlings of this species. My impression is that the nestlings, lying close on the beach as they do, are far more difficult to perceive than the eggs. In this instance I saw two old birds with three young ones through my glasses at some distance from where I was lying on the beach. Keeping my eye on one of the young ones as well as I could, I walked towards it. It started running away at first, but, when it found I was overtaking it, it squatted. On coming up to the spot I was unable to distinguish it, so lay down on the beach to see if I could catch sight of it moving against the sky-line, but without success. I was just moving to get up and go away when I caught sight of it straight in front of me, and not eighteen inches from my face. It was lying in the typical position which these young Plovers always seem to take when they

are attempting concealment (and which is capitally illustrated in the case of Stone Curlews at the South Kensington Museum), seeming as though they were trying to flatten themselves on to the ground longitudinally. I am not aware whether any of the adult English Plovers besides the Stone Curlew adopt this skulking habit, but I believe all their young do upon occasions. I have noticed it myself in the case of the Ring Plover, the Lapwing, the Oystercatcher, and the Common Sandpiper, and also in the case of some of the Gulls and Terns. It is not a simple crouching down on the ground; the outstretched neck and the evident effort to keep the under side of the throat and body as close as possible to the ground give it characteristics quite different to the ordinary skulking or squatting of many other birds which are hatched on the ground. It is curious and not without interest to note that the young of the Emu in Australia have exactly the same habit. When a few days old it is not a difficult thing to run down young Emus, and I have on more than one occasion done so in New South Wales. As soon as the young Emu found that it was being overtaken it would lie down in the grass with the same tense drawn-out attitude that the young of the Plover-kind assume. Might it not be reasonable to argue the possibility of this instinctive habit, common to two such widely different races of birds, being an inheritance from a common ancestor?

The behaviour of the old Ring Plovers when one is handling their young does not seem to be bound by any particular method or rule. I picked up this little atom of down and took it away at least half a mile to show to my wife. It was perhaps three-quarters of a hour before it was returned to the beach. On hearing its call one of the old birds immediately flew up, but it seemed quite contented when its young one was placed on the beach, running round it, and making a good bit of fuss over it, but taking no notice whatever of the onlookers. On another occasion, a few days later, when I caught a nestling, one of the parent birds went through all the antics of simulating broken legs and wings so often described in books, which culminated in the bird lying on one side, flapping its other wing in the air as though on the point of death. This bird seemed to be so pleased with its acting that it kept it up for a long while after I had left

its young one, and I looked back through my glasses when I was nearly two hundred yards distant, and still saw one wing waving in the air.

The markings of the downy nestlings are well adapted to conceal it from the observer, while the irregular shape of the young bird and the rough surface of the down make it undoubtedly less noticeable than the eggs. Its upper surface is grey, stippled with a darker shade of grey and some black, and a little tinge of yellow, and there is a narrow ring of black down round the back of the neck. The whole of the under side is white, with no sign of the black pectoral band which is such a distinctive feature of the old bird. The front of the tarsi and the upper surface of the feet and toes are greyish lead-colour, the back and under surfaces of the same parts being dull flesh-colour. The tip of the beak is black, and the base flesh-colour. There is a small tract of skin on each side of its neck, and under each wing quite bare of down.

Another nest of this species, which had been found on the 15th May with four eggs all chipped, was shown to me on the 16th with all the four nestlings hatched out and still in the nest, lying in the typical position already described, as close together as possible, and with all four beaks pointing in one direction. I could see no trace of any egg-shells anywhere near the nest. The down of these was as already described, except that there was a bare tract of skin on the shoulders. On the evening of May 20th I found a nest with two young ones hatched, and the other two eggs chipped. The following morning, at nine o'clock, a third bird was hatched, the down being still damp, and the three young and the fourth egg being all in the nest hollow. Unfortunately, as I was leaving the same morning, I was unable to watch this nest any longer. I was rather surprised in both these cases at the young staying so long in the nest after being hatched, but, as we were having rather cold weather at the time, this would no doubt influence their behaviour.

The conduct of the Lapwing about its nest and eggs was much the same as that of the Ring Plover. It would settle on the beach at some distance from its nest, and make a similar series of devious runs, until with a final short run it would settle on its eggs; also when disturbed it would generally run a short distance

before taking wing ; but if taken by surprise—as, for instance, it may be if its nest is anywhere near a bank or wall—it would rise right off the nest. I also found that its eggs were often not arranged in the nest as Plovers' eggs are generally supposed to be, but I think that the irregularity is only due to accidental carelessness when the bird is leaving its nest. I caught a nestling of this species on the 12th May. Its protecting colouring was amply illustrated by the difficulty I had in finding it when I got to the spot where I had seen it moving. Its upper surface is a greyish dun-colour with black stipplings. There are patches of bare skin on each shoulder, the skin itself being black. The down on the under side is white with the exception of the black pectoral band. It is curious that the black pectoral band should be present in the nestling of the young Lapwing, and not in that of the Ring Plover, when it is quite as distinct a feature in the adult of both species. The beak is blackish, and the tarsi and feet are lead-coloured in front and above, and flesh-coloured behind and on the soles.

I should be inclined to think that the Lapwing is a rather more wary bird than the Ring Plover. The latter bird would often go on to its eggs when the observer's head and shoulders were plainly visible to it, the only necessity being to get far enough away, and to lie quite still. On the other hand, I was never successful in watching a Lapwing on to its eggs unless I got altogether out of sight behind a bush, or other suitable shelter. This of course sometimes meant being a considerable distance away, but the larger size compensated more or less for the extra distance. One would have several fruitless watches for every successful one with both birds, and it was often very puzzling to diagnose the actions of the birds. But, as a rule, when both birds of the pair were to be seen together, I came to the conclusion that they either had no eggs or an incomplete clutch, as I was never successful on such occasions in watching the bird on to its nest ; or their eggs were hatched and the young were near ; but in this latter case their excited behaviour would always betray their anxiety, and a little longer exercise of one's patience would probably be rewarded by a glimpse of the young ones running among the pebbles. In the case of a full clutch of eggs, with the bird sitting, you would almost invariably only see a

single bird, which would be very quiet in its behaviour, and as soon as things seemed safe would quickly commence its stealthy run towards its treasures.

The small colony of Black-headed Gulls (*Larus ridibundus*), which nest in some pieces of water in the centre of the beach at Dungeness, is not thriving. There only seemed to be a very few pairs breeding in the biggest of these ponds amongst some rushes safely out of reach of anyone without a boat. There can be no doubt that the birds are much persecuted. I came across another colony of these birds some miles inland in a reedy swamp. Unfortunately the birds here seemed to be having quite as bad a time as those on the beach. The nests were built in some coarse swamp grass growing in about two feet of water. The fabric of the nest seemed to be started from the ground, the foundation being formed of coarse sedges, and built up to from three to six inches above the level of the water, the cup of the nest being finished off with the finer tops of the reeds. There were thirty nests in this colony, of which only ten contained any eggs. The previous day had been a Sunday, but had not, I think, been a day of rest for the Gulls. There were three Coots' (*Fulica atra*) nests amongst those of the Gulls, and several nests of the Little Grebe (*Podicipes fluviatilis*) in the ditches on the edge of the same swamp.

It remains to be mentioned that I saw the following birds on this occasion, which I did not notice in 1900 :—Whinchat (*Pratincola rubetra*), a pair on the marsh-land; House-Martin (*Chelidon urbica*); Sand-Martin (*Cotile riparia*); Jackdaw (*Corvus monedula*), a thriving colony in the ruins of Camber Castle; Cuckoo (*Cuculus canorus*), frequently heard and seen on the marsh-land; and Grey Plover (*Squatarola helvetica*), a pair on the beach evidently on migration. The Common Curlew (*Numenius arquata*) was less numerous, and the Whimbrel (*N. phaeopus*) was more numerous than in 1900.

NOTES AND QUERIES.

MAMMALIA.

The Use of the Giraffe's Bilobed Canine.—In the course of his memoir on the Okapi, published last year in the 'Transactions' of the Zoological Society, Prof. Ray Lankester drew attention to the circumstance that all the living, and many (if not all) of the extinct members of the *Giraffidae*, are distinguished from other ruminants by the crown of the outermost of the four pairs of lower front teeth (corresponding to the canines of other mammals) are bifid, or bilobed; this bilobed structure having been observed in the Giraffe and the Okapi, as well as in the extinct *Sivatherium* of India and the *Samotherium* of Southern Europe. No explanation was at the time given for this departure from the normal structure.

Recently I have had an opportunity of watching carefully the mode in which a Giraffe plucks the leaves from a bough. The leaves are first grasped by the long and extensile tongue, and are then stripped from the bough by being drawn between the lower teeth and the front of the palate in such a manner that the twigs of the bough itself are left practically uninjured. The lower front teeth act, in fact, as a kind of comb in stripping off the leaves; and I think there can be little doubt that the broad bilobed crowns of the outer pair of teeth have been developed in order to increase the breadth of this "comb," and at the same time to render its comb-like action as efficient as possible.

Deer and cattle, when browsing, eat the twigs as well as leaves, and since this difference in habit is correlated with a simple lower canine, while there is almost certainly some good reason for the bifid crown of that tooth in the Giraffe and its allies, there appears to be a strong probability of the truth of the foregoing suggestion. Should it be well founded it will be evident that the *Sivatherium* and other extinct relatives of the Giraffe and the Okapi fed in the same manner as those animals.—R. LYDEKKER.

AVE 8.

Strange Nesting-place for a Mistletoe Thrush (*Turdus viscivorus*). We have here a piece of land of about four acres, which we have planted, placing the trees about ten yards apart. Most of them are Scotch firs, and vary from three feet to four feet high. In one of these is a nest of this bird, and is only two feet three inches from the ground. It is seldom this fine Thrush builds so low; in fact, this is the lowest I have seen. The little tree is on a wind-swept hill-side, and there are trees of many sorts and all sizes in the vicinity, making it still more curious.—J. WHITAKER (Rainworth Lodge, Notts).

Nightingale's late Arrival in Somerset.—Nightingales (*Daulias luscinia*) are fourteen days overdue in their arrival in this district this year as compared with last; they are well distributed now (May 1st), and steadily increasing. There are two pairs in Lyatt Wood, two pairs at Dulcote, six pairs in Park Wood—these latter can be heard singing from the Palace Moat (May, 1902). Many single pairs are to be met with through the Twin Hills Woods and Ham Woods, and in the opposite direction through Stoke Woods (abode of Long-eared Owls), and at points along the valley to Axbridge; I have not met with a Nightingale between Axbridge and Weston-super-Mare. I have proved that Nightingales live in harmony with Garden Warblers, for they nest closely together; but where I find Blackcaps I cannot find a Nightingale. Dates of arrival:—1901, April 17th; 1902, April 14th; 1903, April 28th.—STANLEY LEWIS (Wells).

White Wagtails at Bartragh, Killala Bay.—Supplemental to my notes (*ante*, p. 190), I may state that there was a recurrence of the visits of *Motacilla alba* on the 17th and 18th of May to the island. Captain Kirkwood, on the first-named date, met with a flock of ten birds feeding on a wet sandy flat between his garden and the seashore. (This is a favourite haunt, where they are almost certain of being seen if on the island.) This flock remained only a few hours, but next day (the 18th) he saw five birds in his garden, and evidently so tired that some of them allowed him to approach within three or four yards to where they were resting on some wire pea-supports.—ROBERT WARREN (Moy View, Ballina).

Lesser Whitethroat in Cardiganshire.—During a residence of twelve years at Aberystwyth I have not met with a single occurrence of this species (*Sylvia curruca*) until the present spring. On the evening of May 9th I listened to its well-known song at Cwm Padarn, about a mile from this town, and watched the bird as it made its way

along the hedge. The occurrence of the Lesser Whitethroat in Western Wales must be pronounced rare and exceptional.—J. H. SALTER.

Involuntary Capture of a Swallow.—The following is a cutting from the 'Waterford Standard,' May 16th, 1908 :—

"A STRANGE OCCURRENCE.—MR. Frank Davis Goff, of Rockmount, Kilmacthomas, had, on Monday last, a new if not an absolutely unique experience while fishing on the Tay, a stream that runs from the Comragh Mountains. While walking along the bank with his rod in an upright position, and the casting-line flying in the breeze, he felt a weight somewhat like that of a Trout, and on looking up to ascertain the cause he was amazed to see a Swallow dangling from the tail-fly—the bird, doubtless, mistaking the artificial fly for the natural one. He at once reeled in the line, and, gently taking off the bird, let it off, and it flew away apparently none the worse for its mistake. Can any of our readers relate a similar incident?"

I cannot find in any of the text-books that I have on British Birds, or in the pages of 'The Zoologist' for the last twenty-five years, any account of a similar capture of *Hirundo rustica*, though I have often thought that such an occurrence was quite possible. Mr. E. F. Bisshop relates (Zool. 1886, p. 417) that while fishing once for Tench three Swallows perched on his rod at one time, but this was apparently while it was fastened into the ground and stationary. The capture of a Swallow by an artificial fly must be very unusual. It seems strange that a bird with such a sharp eye could be deceived.—WILLIAM W FLEMING (Coalfin, Portlaw, Co. Waterford).

[In Boosey's 'Piscatorial Reminiscences and Gleanings' (p. 240) two records are given of Swallows being hooked in a similar manner. I have met with other instances, but cannot for the moment remember where published.—ED.]

Goldfinch (*Carduelis elegans*) in South Africa.—With reference to the note (*ante*, p. 191) on the extension of the range of this species in Australia and Tasmania, I may mention that Mr. Barton, a soldier in the Suffolk Regiment, who has lately returned from South Africa, has two live Goldfinches at the present time in Bury St. Edmunds which he caught on the hills at Heidelberg, in the Transvaal, when stationed at Boxburg. He informed me that they were common half-way up the hills and breeding, one being in the nesting plumage when he caught it. I have seen these two birds myself, and they appear to be exactly like the English Goldfinch, but if anything a trifle smaller. So far as I can ascertain, this is the first occasion upon which the

species has occurred in South Africa. Mr. Barton also showed me some Canaries which he caught in the same locality, and from which he has bred since he returned home, which I am unable to identify with any of the wild species recorded from that region, as they vary so much in colour and markings that no two of them are alike. Some are nearly all yellow, others more or less marked with green, the markings varying considerably, and being most irregular in their distribution. One bird is almost entirely yellow with a green cap, whilst others are much marked with green about the wings and body as well. They look just like the ordinary parti-coloured Canaries you see in cages in England.—E. A. BUTLER (Plumton House, Bury St. Edmunds, Suffolk).

[This is a most interesting record for one who, like myself, has collected and observed birds for a period of four years in the Transvaal. During that time I neither saw this bird nor heard the slightest suggestion that it was to be found in a wild condition. It is practically certain that the Goldfinches caught at Heidelberg must have been escaped birds, and it seems as equally correct to say that nothing of the kind was known up to near the end of 1896, when I left the Transvaal. A friend who kept imported Goldfinches in his aviary at Pretoria complained that they were difficult to keep alive for any length of time. I have written to the Transvaal for further information on this subject.—ED.]

A Vanishing British Bird.—In the April number of this Journal Mr. Robert Warren protests against the continued persecution of the Red-throated Diver at its single Irish breeding-haunt. It is unfortunately only too easy to point to other cases of a similar kind. But for the greed of private egg-collectors, who fill their cabinets with clutches of British-taken eggs of our rarer species, the Kite, though in small numbers, and in a limited district, would be safe from all immediate danger of extinction. Instead of this we find it reduced, as far as Wales is concerned, to a miserable remnant of two or three pairs. All who have seen *Milvus ictinus* upon the wing will agree with Knapp, the Gloucestershire naturalist, when he terms it "the finest native bird that we possess." Yet the present decade will in all probability see its extinction as a British bird. It cannot be too plainly stated that it is not the dealers who have harried the nests systematically for years who are primarily responsible for its fate, but the wealthy collectors who offer in some cases as much as £15 for a clutch of Welsh Kite's eggs. Many of them have never seen the bird in its haunts, and appear to have no interest in it apart from its eggs. In

this connection I may be allowed to quote from a letter received from Mr. R. J. Ussher, the well-known author of the 'Birds of Ireland.' He says:—"It is indeed deplorable to think that one of our finest native birds should be persecuted to extermination by the sordid greed of dealers and of collectors who show by their purchase of British-taken eggs of the Kite that the feelings of the true ornithologist are unknown to them. Both the dealers and their clients are shy of notoriety, but their names are known, and shall be handed down, that naturalists of the future may credit them with their fair share in bringing about the extirpation of this fine bird. For our present purpose it matters not whether the eggs have gone to Warwick or to Suffolk. The one clear conclusion is that the purchaser of British-taken eggs of a rare species, be it the Kite, the Great Skua, or Red-necked Phalarope, is directly contributing to hasten the extermination of yet another member of our avifauna. Incidentally our efforts to protect the Kite have brought to light other details of the war of extermination now being waged by the dealer and his patrons. We hear of thirty-seven eggs of the Common Buzzard taken from Wales as the proceeds of a single raid; of one hundred eggs of the Chough taken last year from a single Irish island; of £2 10s. offered by a Yorkshire naturalist for a local clutch of eggs of the Stone Curlew. Doubtless the increase in game-preserving, the felling of large woods, and opening up of the country have driven the Kite from most of its former haunts, but it must be insisted that it has finally succumbed to the 'oologist,' its last and most relentless foe. I have myself made the largest collection of native birds' eggs in Ireland, but have steadfastly abstained from taking or procuring the eggs of any bird in danger of extinction, such as the Golden Eagle or the Red-throated Diver, though I could easily have obtained them. I trust that English collectors may be led to see how discreditable a thing it is to be instrumental in the extinction of a British species."—J. H. SALTER.

Pintail inland in Cheshire.—*Dafila acuta* is a not uncommon winter visitor to the estuaries of the Dee and Mersey, and, judging by the number taken in recent years in the duck-decoy at Hale on the Lancashire shore of the Mersey, it is becoming more plentiful. This Duck seldom wanders far from the coast, and, as it does not appear to have been recorded from any of the Cheshire inland waters, the occurrence of a drake on the pool at Norbury Booths, near Knutsford, on April 8th, is noteworthy. During the time I watched it the Pintail swam near to, but apart from, some Mallards, and did not associate with the Tufted Ducks, four pairs of which were on the water. When

I visited the pool on the morning of the 9th it had gone.—CHARLES OLDHAM (Knutsford).

The Rock-Dove (*Columba livia*) in Somerset.—With reference to my previous note as to the breeding of this species at Cheddar Cliffs, I should like to mention that Mr. Alfred West, of Cliff Street, Cheddar, has shot many of these birds on the bean-stubble about August; he also informs me that he saw the two eggs of this species on a ledge about four feet in a cleft of the rocks—no nest—1902. The following remark to me from the same person, and quite unasked for, should go some way towards proving the identity of these birds. I had told him of my discovery of Rock-Doves in the cliffs, and that I had seen them flying swiftly from out the ivy. He remarked, “Oh, yes; where did you stand?” I replied, “In the road” (beneath the cliffs). He continued: “The best way is to walk along the cliffs’ head, and then you can see their checkered wings and white rumps.” The local name is Rock-Pigeon.—STANLEY LEWIS (Wells, Somerset).

Dotterel (*Eudromias morinellus*) in Cheshire.—On May 8th, at Sealand, near Chester, I had the good fortune to see a party of fifteen Dotterel in their beautiful summer dress. When I first saw them they were wheeling about in a compact body over a fallow-field adjoining the high road; on alighting near some water lying in the field they at once proceeded to wash—with the exception of one bird who acted sentinel—giving me a good view of their actions whilst so employed. This is now a rare bird in Cheshire, though it is stated that it occurs almost yearly in spring on the moors of North-east Cheshire.—S. G. CUMMINGS (King’s Buildings, Chester).

Variation in the Guillemot.—It is quite possible, as Mr. Warren suggests (*ante*, p. 194), that the Rev. Julian G. Tuck and I are mistaken in thinking the Guillemot described in ‘The Zoologist’ (*ante*, p. 158) might be a hybrid, but as to its being a very unusual “freak” there can be no doubt. I am quite aware that the winter and summer plumage of the Common Guillemot differ in a marked degree, being very dark in winter as compared with the sooty brown summer dress, and we did not form our provisional diagnosis from the colour alone, as will be seen from the rough description I gave. Many dozens of specimens in both summer and winter plumage have been handled by me, and I have watched the birds at all seasons, this last winter especially, and I have noticed that, though in the usual winter plumage, the back and upper parts are very dark; one occasionally comes across a specimen having these parts quite the same as in summer. (Are we

going to find the Common Guillemot playing the same pranks as its black relative?) I must plead guilty to having slaughtered a great many Guillemots last winter in the hope of getting another doubtful specimen, but have failed utterly, as have others whom I asked to look out for any exceptionally dark or curiously marked specimens.—T. EDMONSTON SAXBY (Halligarth, Baltasound, Unst, Shetland).

Great Crested Grebe (Podicipes cristatus) on Mansfield Reservoir. My son and self drove over to this large sheet of water to see if there were many Great Crested Grebes nesting on May 6th. The keeper's boy was there with the boat, and when we got well out I was surprised to see so many Grebe. They were near the top end, where there are the only small beds of light water-weeds; and, as the water was very high after the big rains of the previous days, the nests showed well on top of water. I was delighted to count eleven pairs—twenty-two birds—all in sight, and the boy said there were twelve pairs. We found five nests, and in one five eggs. The keeper, who has looked after the water for twenty-five years, said he had taken great notice, but had never seen five eggs in a nest before; so we took it for the collection. On rowing back I had the delightful pleasure of seeing twenty Grebe following each other up the middle of the water, and a fine sight it was, and one I never, in nesting or other season, saw before. This bird now nests on all the large lakes in this county, but nowhere in such numbers as it does on this reservoir, which is ninety-six acres in extent. There were numbers of Coots, Water-hens, and two pairs of Little Grebe, also a pair of Tufted Ducks—a grand sight.—J. WHITAKER (Rainworth Lodge, Notts).

Ornithological Notes from Guernsey.—The following notes have been taken since my arrival on the island in November last (1902). The exceptionally hard weather of last winter proved very trying to many species, and I have picked up Robins and seen several other small birds quite numbed with the cold. During the latter part of November and in December the hedgerows were infested with hungry hordes of Redwings and Fieldfares, which suffered much from the guns of the local "sportsmen," and their dead bodies, together with those of Blackbirds and Thrushes, which hung daily in the town market, bore witness to the wholesale slaughter that is carried on among the feathered tribe here. All birds are considered game to the Guernsey "sportsman," and if severe measures are not taken soon to prevent this cruel destruction, there will not be in time a song-bird left in the island.

REDWING (*Turdus iliacus*) and FIELDFARE (*T. pilaris*).—Both these

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Thrushes were very plentiful in November and December, but during January I did not notice a single specimen of the Fieldfare, and no Redwings at all.

RING-OUZEL (*T. torquatus*).—I noticed one specimen hanging in the market among a number of Redwings and Song-Thrushes.

FIRECREST (*Regulus ignicapillus*).—I saw one on Dec. 9th, 1902, feeding on a furze-bush, and another in the garden here in March.

BULLFINCH (*Pyrrhula europaea*).—I think this species must be very rare. I have only noticed one, and I see Mr. Cecil Smith marks it as "rare" in his list of the 'Birds of Guernsey.'

CHOUGH (*Pyrhocorax graculus*).—This interesting bird is nowadays only an occasional visitor, though many years ago, I have been informed, they were very common all round the island. I noticed one specimen near Moulin Huet Bay in December, 1902.

MAGPIE (*Pica rustica*).—The Magpie is exceedingly common, and breeds in many places.

CARRION-CROW (*Corvus corone*).—Common all round the coast.

ROOK (*C. frugilegus*).—Only an occasional visitor. One specimen seen at the Forest on April 12th.

WRYNECK (*Iynx torquilla*).—The Wryneck is very common, and is locally called the "Mackerel Bird." It was first heard here this year on April 1st.

KINGFISHER (*Alcedo ispida*).—Only a winter visitor. I have a specimen shot here in November last, and Mr. Jago, the local taxidermist, told me he has had several to preserve during the last winter.

BARN-OWL (*Strix flammea*).—Very common, and a resident.

LONG-EARED OWL (*Asio otus*).—A scarce winter visitor. I have a fine specimen shot here last winter.

CORMORANT (*Phalacrocorax carbo*).—I have not noticed many. The next-named bird seems to be the commoner of the two.

SHAG (*P. graculus*).—Very common indeed. A pair I watched a few days ago appeared to be contemplating nesting. They had assumed breeding plumage.

HERON (*Ardea cinerea*).—A fairly common winter visitor. I saw in the local paper last year that "a rare bird of the Crane family" had been shot, and was exhibited in the market. This turned out to be a Heron.

BRENT GOOSE (*Bernicla brenta*).—This Goose was fairly common last winter, and I heard and saw several passing over the island at night.

TUFTED DUCK (*Fuligula cristata*).—I saw a young female of this species hanging up in the market in January.

POCHARD (*F. ferina*).—I saw a fine male preserved by Mr. Jago, and he informed me they are not at all common here.

SMEW (*Mergus albifrons*).—I saw, hanging up in the town market, two immature specimens which had been shot off the coast.

WOOD-PIGEON (*Columba palumbus*).—This species is very rare here. I have myself only seen it twice.

WATER-RAIL (*Rallus aquaticus*).—I saw one specimen at Les Quarters feeding beside a drain during March.

MOORHEN (*Gallinula chloropus*).—Only a winter visitor. I saw several exhibited for sale in the town market during December.

WOODCOCK (*Scolopax rusticola*).—I noticed one or two for sale in the market during the last winter.

GREAT NORTHERN DIVER (*Colymbus glacialis*).—Mr. Jago informs me he has had several to preserve this last winter.

RED-THROATED DIVER (*C. septentrionalis*).—I saw one in December, 1902, quite close to the pier.—**GORDON DALGLIESH** (Clairval, Collings Road, Guernsey).

BIBLIOGRAPHY.

In a quotation attributed to Dr. Radde on “*Anser rubrirostris*,” Mr. F. Coburn (“On the Specific Validity of *Anser rubrirostris*,” &c., *ante*, p. 49) states that “the bill [of this Goose] commences with a sharply defined crescentic-shaped band of bright scarlet lake,” adding that this is “confirmed by Dr. Radde, cf. Dr. B. Sharpe’s ‘Handb. Brit. Birds,’ ii. p. 229.” This is a good example of these citations, copied by one writer from the other without being verified. Even in the ‘Catalogue of Birds in the British Museum,’ vol. xxvii. pp. 91, 92, the colour of the bill of *A. rubrirostris* is described (as by Mr. Coburn) on the authority of the late Dr. Radde (‘Reis. Sibir.’ p. 858). But the citation is wrong. Dr. Radde says (‘Reisen im Süden von Ost-Sibirien,’ &c., Band ii.; ‘Die Festlands-ornis des südöstlichen Sibiriens,’ St. Petersburg, 1868, 4to, p. 858):—“Auch an diesem Vogel sehe ich um die Oberschnabelbasis einen recht eclatanten rostbraunen Ton sich verbreiten, der auf einem schmalen, vielfach von weissen Federchen durchsetztem Bande, welches die Schnabelbasis einfasst, zu brennendem Fuchsroth gesteigert wird. Ausserdem war der ganze Schnabel dieses Vogels schmutzig weiss.” Quite clearly Dr. Radde means here the colour of the *feathers* about the beak, not of the skin of the beak itself (which was “dirty white throughout”). Dr. Radde begins by “auch” (also), because on pages 854, 855 he made some-

what lengthy remarks on the rusty, sometimes fox-red colour of the feathers of the head (Kopfgefieder) of "*Anser grandis*" near the base of the bill.—SERGIUS A. BUTURLIN (Wesenberg, Estonia, Russia).

I would feel personally obliged to any of your correspondents who would compile a complete or partial list of *English*-killed OSPREYS, with *locality, date, authority, and county* for each (or, if the last item be undesirable, it may be left out). I am preparing a little brochure upon the Osprey, and desire to make this as perfect as I can.—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

ZOOLOGICAL NOTES FROM SYDNEY.

IN my last zoological notes sent to you, I gave some particulars about the "Flying Foxes" (*Pteropus poliocephalus*), and the destruction wrought by them (1900, p. 849). The following is an extract from the 'Sydney Morning Herald' on the same subject :—

"A party of about thirty shooters raided a ' Flying Fox ' camping-ground at the Burra, about five miles west of Moruya. The camp was in a large gully, where the 'Foxes' were found in hanging masses suspended from every branch and bramble in strings reaching almost to the ground, and covering an area close upon a mile square. Every cartridge was used. It is estimated that about two thousand 'Foxes' were shot, as many as fifteen being got in one shot. Notwithstanding the large number killed, apparently as many remained. They are said to be there in millions."

How wonderfully the Australian climate (or should I say climates ?) seems to suit so many of the introduced animals. On every hand we find them flourishing. What a crushing rejoinder, indeed, would it have been to those "old-timers" who were wont to so repeatedly assert that "wherever there is a place for an animal in Nature, there that animal will be found." There are "Wild" Horses; then, in many parts (especially in Queensland), we have large herds of "Wild" Cattle; then there are Pigs, which, consequent upon the free existence, have become lean and wiry. (Occasionally these are hunted, and in one year recently there were killed no fewer than 17,184.) Wild Cats (the common *Felis domestica*) also abound in some districts. There are also Cavies and common Norway Rats, the latter in some cases leading an arboreal existence. Then, of course, must be mentioned the Rabbits and Hares. Though I mention these last, the Rabbits must without doubt take pre-eminence as regards numbers. Millions of them every year are trapped, shot, or poisoned, and occasionally epidemic diseases

carry off great numbers, and yet, notwithstanding all this, "still they come." They are regarded by the settlers as a great curse, as they eat up the grass that is intended for the Sheep. Not only do they eat the blades of grass, but in many parts they scrape out every vestige of a root, leaving the plains for many miles nothing but loose black soil, to be piled into hummocks or hollowed out by every wind-storm. However, grass is not the only thing that Rabbits will eat, and at times every green thing—and withal many things that are not green—are consumed by them. In support of this, I was recently shown (by a botanical friend) a photograph taken in some "mallee country" out west, depicting a piece of mallee-scrub (*Eucalyptus* of species). All the trees shown in the photo, and *many thousands of acres besides*, had been ring-barked by the Rabbits from beneath the surface of the soil up to as high as a "bunny" can reach, and in certain instances where the tree-trunk was in an oblique position every sign of bark had been removed for some distance from the ground. However, the Rabbits are not having it entirely their own way, as some of them are turned to good account, great and increasing quantities being exported every year (last year, 1902, it ran into many millions), besides what are consumed locally. In the Rabbit-infested country, beside the Sheep-runs, miles upon miles of railway are enclosed with Rabbit-proof netting so as to hinder, if not entirely prevent, the "bunnies" from migrating from one part to the other.

Hares are also abundant, though not nearly so as the preceding. During the year 1899 close upon 500,000 scalps of these animals were brought to, and capitation fee paid by, the Stock Department of New South Wales alone. English Foxes, too, are becoming rather painfully common in many parts of the country. Many complaints have been made regarding "Reynard's" depredations among the lambs, and the pest—for such they have become—appears to be spreading throughout the country to a most undesirable extent. In one case it was stated that the shepherds had to surround the Sheep with a ring of fire at night to protect them from the Foxes. Those animals, after killing the lambs, tear out and devour the tongue only, leaving the remainder of the body to rot. It is said that some flock-owners have lost as many as 20 and 30 per cent. of their lambs recently from this cause alone. This country being largely a Sheep-growing one, all things that are detrimental to Sheep are regarded as curses. Our poor harmless and interesting indigens, because they eat grass—that most valuable of substances—have to go. So, to compass the destruction of these creatures, large "drives" are occasionally organized, at which at times many thousands of marsupials of various kinds are annihilated; and

upon the heads of several species a price is set, and a stated amount is paid by the Government (through the Stock and Pastures Protection Board) for all scalps which are brought to them. In compliance with these conditions during 1900 the scalps of 122,855 Kangaroos, nearly 1,000,000 Wallabies, and 12,708 Dingoes (I do not include these last amongst our "poor harmless indigens"), in addition to the Hares and Pigs already mentioned, were brought in and paid for. It will be quite evident that this cannot go on for ever.

Leaving the mammals, and turning to the birds, we find that the English Starling, the Indian Maina, the Goldfinch, the Bullfinch, the Lark, and very many others (not forgetting the almost ubiquitous Sparrow) are rapidly spreading throughout the land, while the Ostrich is being bred here and in South Australia for the sake of its plumes.

In my last communication to 'The Zoologist' (1900, p. 855), I mentioned an instance where a "Bronze-wing Pigeon" (*Phaps chalcoptera*) flew aboard the disabled steamship 'Perthshire' when she was about five hundred miles from the Australian coast. This calls to memory another case of a somewhat similar character. Mr. George Hutton, of the R. M. S. 'Omrah,' has informed me that recently, while this steamer was making one of her periodical trips from London to Sydney, they had left Colombo some hours when they discovered a Crow (gen. et sp.?) flying above the ship. This bird *accompanied them to Australia*, resting on the ship at night time, or when fatigued. This appears to me to be rather a unique occurrence; is it not so?—DAVID G. STEAD (Arncliffe, Sydney).

NOTICES OF NEW BOOKS.

Country Rambles ; being a Field Naturalist's and Country Lover's Note Book for a Year. By W. PERCIVAL WESTELL. Illustrated with Photographs taken direct from Nature by J. T. NEWMAN, and from Drawings by ARTHUR MARTIN. Henry J. Drane.

THIS is a book of lovely illustrations—in fact, we know of no more charming collection of scenes in animal and country life—and Messrs. Newman and Martin may well be congratulated on a distinct success.

As regards the text, much may well be skipped. The author, in his preface, remarks, “There are some entries which may appear “trifling” ; whilst Mr. Aflalo observes, in his introduction, “His style is throughout discursive.” In other words, the letter-press might well be pruned by the hand of a friend who possessed the senses of humour and proportion. The charm of Gilbert White, Knapp, and other similar and well-known writers, is in the fact of their knowing what, as well as how, to observe ; while in these days one is expected to be more or less original. In a recent discussion in the press on the question, “Why men did not go to Church,” it was frequently adduced by correspondents that ordinary sermons contained too many platitudes ; we believe these are fatal to a sermon, and they are certainly destructive to a book. Mr. Westell is evidently a real lover of nature, and his enjoyment of the sights and sounds around him is to be envied and followed ; his volume is a good guide to what may be looked for each month in both plant and animal life.

EDITORIAL GLEANINGS.

PROF. M'INTOSH continues, in the last number of the 'Annals and Magazine of Natural History,' his "Notes from the Gatty Marine Laboratory, St. Andrews." In this instalment we meet with a note "On the Frequency of the Occurrence of Pearls in the Mussel (*Mytilus edulis*)," &c. The frequency of the occurrence of pearls in the various marine and fresh-water shells is fixed by no law. Hundreds of pearl-shells may be examined without finding a single pearl, but, on the other hand, a single Ceylonese shell will occasionally produce a pearl worth a large sum. An experienced pearl-fisherman of the Tay considered that perhaps one in a hundred contained a marketable pearl. From an examination of seven hundred Mussels in the estuary of the Eden, undertaken by Mr. Russell, there was a proportion of 42·8 per cent. of pearl-bearing Mussels. In conclusion, the writer remarks that, "in connection with Dr. Lyster Jameson's views that the Eider-duck and the Scoter are the final hosts of the parasites which form the nuclei of the pearls, it may be stated that both occur in considerable numbers in the estuary of the Eden, and feed on the Mussels. Moreover, the intestine of the Common Scoter in St. Andrew's Bay harbours large numbers of these and other parasites, and thus is in contrast with that of such forms as the Guillemot and Red-throated Diver—birds more purely piscivorous, and in which such parasites are rare, though cestodes are common. It is possible also that other species amongst the many birds frequenting the Mussel-beds, such as the Oystercatcher, may be found to harbour the same parasite."

In the June issue of the 'Irish Naturalist' will be found a most suggestive paper by Mr. C. B. Moffat (originally read before the Dublin Naturalists' Field Club) on "The Spring Rivalry of Birds." The writer approaches the question, "Why birds—and perhaps the higher vertebrate animals generally—do not increase in number from year to year." He does not altogether accept the Darwinian explanation of the "struggle for existence," nor does he the theory of "sexual selection." In fact, as regards birds, he assumes that each male bird is "cock of his walk," that he maintains his ground by combat, and that thus a very large

number of non-breeding birds of both sexes exist, prevented from breeding simply by the fact that they have no suitable ground. The chief and primary use of song, he conceives, is to advertise the presence in a certain area of an unvanquished cock-bird, who claims that area as his, and will allow no other cock-bird to enter it without a battle. Hence bright male colours—apart from what is called "Sexual Selection"—are means to a definite end; they are means by which cock-birds impress certain lessons on one another, and if they do not help a bird to *win* his plot of ground, they, at any rate, render his subsequent possession of it less liable to disturbance. He concludes that Natural Selection does not—as far as birds are concerned—require a wholesale annihilation of the weaker ones as Darwin proposed, "but can, and probably does, largely work by condemning to unproductiveness the less powerful adults."

AMONG the many objectors to the recently expressed views of Dr. A. R. Wallace on 'Man's Place in the Universe,' the distinguished French astronomer, M. Camille Flammarion, has entered the lists in the last issue of 'Knowledge.'

Of the infinite, he remarks that it is "that to which nothing can be added." Of space, that "if we imagine any confine to it whatever, immediately we pass in thought beyond it." He continues:—"In our solar system this little earth has not obtained any special privileges from Nature, and it is strange to wish to confine life within the circle of terrestrial chemistry. Nor is it less so to see a naturalist (whose theories of evolution demand the action of time as the principal factor in the succession of species) forgetting that the epoch in which we now happen to be has no special importance; that the different worlds of our solar family are at different stages of their evolution; and that, for instance, if the Moon is a waif of the past, Jupiter, on the contrary, is a world of the future. The effect of the hypothesis of Dr. Wallace is to narrow our horizon, and to take us back again to the time of Ptolemy, into the prison of a useless firmament. The greatness of modern astronomy, on the contrary, is to burst all barriers, for our science is but a shadow in the face of the reality. Infinity encompasses us on all sides, life asserts itself, universal and eternal, our existence is but a fleeting moment, the vibration of an atom in a ray of the sun, and our planet is but an island floating in the celestial archipelago, to which no thought will ever place any bounds. The careful study of our planet shows that the forces of Nature have

as their supreme end. Yes, life is universal, and eternal, for time is one of its factors. Yesterday the moon, to-day the earth, to-morrow Jupiter. In space there are both cradles and tombs. The red carbon stars will soon be dead; the hydrogen stars, like Vega and Sirius, are the stars of the future; Procyon, Capella, Arcturus are the stars of the present. Aldebaran seems to be already an autumn fruit. Let us open the eyes of our understanding, and let us look beyond ourselves in the infinite expanse at life and intelligence in all its degrees in endless evolution."

We have received from Mr. J. W. Tutt a reprint of his articles on the "Migration and Dispersal of Insects," which originally appeared in the 'Entomologists' Record.' This booklet consists of a recapitulation, in an orderly form, of *many* of the records made by various travellers and naturalists on the subject, and hence is a very valuable contribution to a knowledge of the observed facts, on which a future explanation of the phenomena can alone be based. It is published by Elliot Stock.

We are glad to find that the galleries of our great Natural History Museum are not only a resort for the public at Eastertime, but also that the visitors on Easter Mondays show an increase. The following figures speak for themselves:—

April 16th, 1900,	visitors	11,897.
April 8th, 1901,	"	11,595.
March 31st, 1902,	"	11,069.
April 18th, 1908,	"	18,114.

MAGPIES, which abound in the environs of Moscow, have a bad time in store for them. One Berlin firm alone has given an order for the immediate supply of 80,000 of these birds, which will be shot to provide trimmings for ladies' hats. Russia has recently been obtaining an unenviable notoriety for the slaughter of wild birds for millinery purposes. Archangel is a well-known centre for the export of the wings and feathers of birds. Black-throated Divers' necks are sold in vast quantities there for trimmings for ladies' cloaks, muffs, boas, &c. The wings of the Willow-Grouse also are brought down in large cargoes to Archangel, one such cargo recently amounting to ten tons. The white plumage of the Willow-Grouse has the unusual quality that it can be dyed any colour and used for ladies' hats.—*Daily Mail.*

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ON THE IDENTIFICATION OF SOME OF THE BIRDS MENTIONED BY ARISTOTLE.

By T. E. LONES, M.A., LL.D., B.Sc.

THE determination of the genera and species of the birds mentioned by Aristotle has occupied the attention of many naturalists and classical writers. Of the earlier efforts in this direction, those of Gesner and Belon may be specially mentioned, while in later times this difficult work of identification has received careful attention from Billerbeck, Gloger, and Sundevall. As a result of the labours of these and other workers, both the genera and species of about ninety of Aristotle's birds are fairly well known, and of the remainder—about eighty in number—the genera only of about forty have been determined with more or less success. Among the birds whose identification has caused much controversy may be instanced those which are included, by modern naturalists, in the families *Cypselidae* and *Hirundinidae*, and various water-birds probably belonging to the families *Anatidae*, *Laridae*, and *Podicipedidae*. The identification of some of these birds will be considered in this paper.

There are two important points to which attention may be drawn advantageously at this early stage of the inquiry. In the first place, Aristotle was in an especial degree what would now be called a comparative zoologist, and in many cases his descriptions of birds are meagre, and serve mainly to illustrate generalized statements made about their structure and modes of life.

Sometimes—as, for instance, in the ninth book of his ‘History of Animals’—he gives descriptive accounts of various birds, but the best of these accounts is very incomplete. The data upon which the identification of Aristotle’s birds must rest are therefore often insufficient. Secondly, some of the names—such as *λάπος*—used by Aristotle, probably indicated birds belonging to more than one species, or perhaps even genus, according to modern ideas of classification. Aristotle does employ a word (*εἶδος*) which can sometimes be fairly rendered by the modern word “species,” and also a word (*γένος*) which may be represented occasionally by the word “genus,” but is usually more nearly equivalent to one of the modern terms—class, order, and family. Synonymy of the Aristotelian and modern zoological names is therefore exceptional, as might be reasonably expected.

Let us first consider those birds referred to above as belonging to the families *Cypselidae* and *Hirundinidae*. Aristotle deals with them under the names *apous*, *cypsellos*, *drepanis*, and *chelidon* (abandoning, for convenience’ sake, the use of the Greek characters). The following are the chief passages:—

“Also, there are weak-footed birds which, on this account, are called *apodes*. They have well-developed wings, and some birds nearly like them have well-developed wings—but weak feet, as, for instance, *chelidon* and *drepanis*; for all these are similar in habits and wings, and nearly alike in appearance. The *apous* is seen during the whole season, but the *drepanis* when it rains in summer, for then it is both seen and caught, but is a rare bird on the whole.” (Hist. Anim., book i. 1, 9.)

“And there are some which have neither their œsophagus nor crop wide, but a long stomach [or, perhaps, stomach and intestines], these being small birds, such as *chelidon* and the sparrow.” (Ibid. ii. 12, 16.)

“But sometimes self-coloured birds, black or dark, such as the crow, sparrow, and *chelidones*, become white through seasonal changes, as, for instance, when the cold increases.” (Ibid. iii. 10, 11.)

“Wild birds, as I have said, usually pair and hatch out young once a year, but *chelidon* and the blackbird hatch out young twice.” (Ibid. v. 11, 1.)

"The thrushes, like the *chelidones*, make their nests of mud." (Ibid. vi. 1, 3.)

"The *chelidon*, to a greater extent than carnivorous birds, nests twice a year." (Ibid. vi. 5.)

"Many birds hibernate and do not all depart for warm localities, as some say, but those which are near places such as those in which they are resident migrate thither, as, for instance, the kites and *chelidones*; those which are farther away from such places do not migrate, but hide themselves. For many *chelidones*, entirely stripped of feathers, have been seen in the valleys. . . . Some of the wood-pigeons hibernate; others do not, but migrate with the *chelidones*." (Ibid. viii. 18.)

"On the whole, many other animals may be regarded as imitating man in their modes of life, and a precision of purpose may be seen more among the smaller than the larger animals, as, first of all among birds, the building of its nest by the *chelidon*. For it combines mud with straws in the same way, since it intimately mixes mud with straws, and, if mud is not available, the *chelidon*, having wetted itself, rolls with its wings in the dust. Besides, the *chelidon* uses straws just as men do, first placing the rough ones below, and making [its nest] proportional in size to its own bulk. Both [cock and hen] work hard to rear their young." (Ibid. ix. 8, 1.)

"We have before stated that the *apodes*, which some call *cypsellois*, are like the *chelidones*; for it is not easy to distinguish [the *apodes*] from *chelidon*, except that it has its metatarsus rough [=hairy, or perhaps feathery]. These hatch out their young in deep receptacles moulded from mud, having an entrance of suitable size. They build their nests in a narrow place under rocks and caves, so that they avoid both wild animals and men." (Ibid. ix. 21, 1.)

"Both the wasps and the titmice, and also *chelidon* and the bee-eater, injure them [the bees] very much." (Ibid. ix. 27, 16.)

"Some birds hatch out imperfect and blind young ones, these birds being such as are prolific and not large, such as the crow, magpie, sparrow, and *chelidon*." ("Generation of Animals," iv. 6.)

(The extracts given from Aristotle's 'History of Animals'

have been translated from Schneider's edition, which is admitted to be the best text. The extract from Aristotle's 'Generation of Animals' has been translated from Didot's edition.)

The identification of the bird called *drepanis* has given rise to much difference of opinion. Gesner and Belon considered that it was the Sand-Martin, Gesner stating (*Hist. Anim. lib. iii. de Avium natura*, Zurich, 1555. Folio, p. 545) that *drepanis* seems to be no other bird than *riparia*, mentioned by Pliny, and called by some Germans "the little bird of the Rhine." In Billerbeck's table ('*De Avibus ab Aristotele Plinioque commem.*' 1806, 8vo) both the Sand-Martin and, apparently, the Alpine Swift are given under the name *drepanis*. Gloger was of opinion that the Common Swift, or the Alpine Swift, was meant, and Sundevall preferred to identify *drepanis* with the Alpine Swift.

Now, *drepene* means a sickle, and it is very probable that the name *drepanis* was given to the bird because the form of one of its parts was suggestive of that implement. The great difficulty is to decide to what part of the bird the name referred. Gloger and Sundevall considered that this part was the wing, the former stating, what is by no means certain, that the name could scarcely be given on account of the form of the claws ('*Dissert. . . . de Avibus ab Aristotele commem.*' 1830, 8vo), and the latter pointing out that the Alpine Swift (*Cypselus melba*) has the most sickle-shaped wings ('*Die Thierarten des Aristoteles*', Stockholm, 1863, 8vo). It seems most likely, however, that the Alpine Swift, with its exceedingly well-developed wings, short feet, and feathered metatarsus, should be included under the name *apus*, together with the Common Swift (*C. apus*). That *C. melba* is not *drepanis* appears to be consistent with Aristotle's statement that the *drepanis* is seen during rainy weather in summer, and is a rare bird on the whole; for *C. melba* is common in Greece during the breeding season, according to Lindermeyer, and is sold in large numbers in the Grecian markets. Modern Greeks also give the name *drepanis* to a Martin (according to Contopoulos), and, I believe, the one to which the name is specially applied is the Sand-Martin. The long and curved first claw of this Martin might readily suggest the name *drepanis* to anyone who examined one of these birds. Theodore of Gaza, at any rate, called the Sand-Martin *falcula*, a word signifying a small sickle, and, by

metonymy, a claw, in which sense Pliny also uses the word. Further, the Sand-Martin is not common in Greece, as there are few rivers there suitable to its mode of life. It may also be stated that it would be more likely to be seen after heavy summer rains than at any other time, and that its stay in Greece is comparatively short, Von der Mühle saying that the Sand-Martin migrates south from Greece very early in the autumn, even earlier than the House-Martin. All these facts tend to show that *drepanis* was the Sand-Martin (*Cotile riparia*). At one time it seemed to me that the Crag-Martin (*C. rupestris*) was the bird meant, but, although this is a rather rare bird in Greece, it has been established that it is resident there, according to Lindermeyer, Seeböhm, and others. Aristotle's *drepanis* does not appear to have been resident. Besides, the Crag-Martin seems to be called *chelidōni* by some modern Greeks, according to Dr. Erhard's 'Fauna der Cycladen.'

A consideration of the extracts previously given from Aristotle, and of the structure and modes of life of the *Cypselidae* and *Hirundinidae* of Greece, would seem to show that the Swifts (*Cypselus apus* and *C. melba*) should be included under the ancient name *apous*, and that the Swallow (*Hirundo rustica*), at least, should be included under *chelidon*. Whether the House-Martin and the Crag-Martin, if that bird were known separately by Aristotle, should also be included under *chelidon*, is difficult to decide. The inquiry, as far as the Crag-Martin is concerned, may best be abandoned, the data being wholly insufficient. With regard to the House-Martin, Aristotle must have known this bird well, as it is an exceedingly common summer resident in Greece. When the extracts from Aristotle are considered, however, some are found to be not inconsistent with the view that *chelidon* included the House-Martin; but, on the other hand, there is one important passage which tends to show that the House-Martin was regarded by Aristotle as one of the *apodes*. This passage is given in his *Hist. Anim.* ix. 21, 1, which states definitely that the *apodes* differ from *chelidon* in having a rough, hairy, or feathered metatarsus (*κνήμη δασεῖα*), a statement clearly applicable to the House-Martin, as Gloger said. Then follows the nesting description, which appears to be intended to refer to the *apodes*, but applies emphatically to the House-Martin of

Greece; for *C. urbica* is (according to Dresser's 'Birds of Europe,' vol. iii.) the Rock-Martin *par excellence* of Greece, building its mud nests in the caves in which Greece and Western Asia Minor abound. Again, there is a highly interesting passage in book viii. chapter 60, of Athenæus' 'Deipnosophistai,' where the Rhodian method of collecting or begging, called "chelidonizing," is described, it being stated that *chelidon* has a white belly and black back, a description which does not accord well with the actual colouring of *Chelidon urbica*. On the whole, it would appear that the House-Martin of Greece and Asia Minor is one of Aristotle's *apodes*, and, adopting this view, the difficulties of the nesting description in Hist. Anim. ix. 21, 1, disappear to some extent.

In the same passage (Hist. Anim. ix. 21, 1), Aristotle says that the *apodes* are called *cypselloï* by some, and Pliny, as is so often the case, copies him. Some writers, however, neglecting Aristotle's distinct statement, say that *cypsellos* was the Sand-Martin, and Sundevall states that it is unlikely that *cypsellos* was the same as *apous*, but that two distinct kinds of birds were known in Greece under these names, but that Aristotle confounded them in his description. It seems to be more satisfactory to take Aristotle's statement as it stands, just as Gesner and Belon did, and to regard *cypselloï* as a name applied by some ancient Greeks to the *apodes*.

The water-birds which will be discussed in this paper are referred to by Aristotle under the names *cynos*, *chen*, *micros chen*, *chenalopex*, *aix*, *netta*, *boscas*, *penelops*, *phalaris*, *colymbis*, *laros*, and *aithyia*, abandoning the use of the Greek characters as before. The following are the chief passages containing references to these birds:—

"There are animals which obtain their food and pass their time in water, yet do not take in water but breathe air, and breed out of the water. . . . Some of these are winged, as, for instance, *aithyia* and *colymbia*." (Hist. Anim. i. 1, 6.)

"Also animals may be retiring and cautious, like the *chen*." (Ibid. i. 1, 15.)

"Not all birds have cæcal appendages of the intestine, but most birds have them, as, for instance, *netta*, *chen*, and *cynos*." (Ibid. ii. 12, 17.)

"The *aithyia* and the *laroi* hatch out their young, two or three in number, among the rocks by the sea, but the *laros* does so in summer, and the *aithyia* in early spring just after the equinox; they incubate like other birds, and neither of them hibernates." (Ibid. v. 8, 4.)

"The eagle sits about thirty days, and for other large birds this is the period of incubation, as, for instance, in the case of the *chen* and bustard." (Ibid. vi. 6, 2.)

"Only the female *chenes* incubate, and, once they commence to do so, sit continuously." (Ibid. vi. 8, 1.)

"Also the stork and *laros*, and the *laros* is ash-coloured, and the crows feed upon animals cast ashore, for they are omnivorous. Also the white *laros*, storm petrel, *aithyia*, and thick-knee." (Ibid. viii. 5, 7.)

"The heavier web-footed birds live in the neighbourhood of rivers and lakes, as, for instance, *cyncos*, *netta*, *phalaris*, *colymbis*, and also *boscas*, which is like *netta*, but smaller; and the cormorant. Also, the great *chen*, the small *chen*, which is gregarious, the *chenalopex*, *aix*, and *penelops*." (Ibid. viii. 5, 8.)

"The crane, *cyncos*, pelican, and small *chena* are gregarious birds." (Ibid. viii. 14, 6.)

"The vulture and *cyncos* fight with the eagle, and the *cyncos* is often victorious; the *cyncoi*, among birds, are especially disposed to devour [? fight with] one another." (Ibid. ix. 2, 9.)

"The *cyncoi* are capable of singing, and sing especially towards the end of life." (Ibid. ix. 18, 2.)

"The web-footed birds, and those which have their feet divided but flattened, so that they are in the same class as the web-footed birds, have their necks long but their legs short for swimming, and of necessity, on this account, some swimming birds are simply web-footed, and others have their toes separated one from another, but there is attached to each of them something continuous throughout the toe, like an oar." ('Parts of Animals,' iv. 12.)

The species of Swan included under Aristotle's *cyncos* are probably *Cygnus olor* and *C. musicus*, the former of which is resident in Greece, and breeds on Lake Copais, according to Dr. Krüper, and the latter is a winter visitant. The word ἀλισφάγος (devouring one another) in the Greek text is difficult to under-

stand. Sundevall prefers the reading ἀλλαφίαι (fond of one another), but ἀλλαμέχοι (fighting one another), which has also been proposed, would be the best reading, for the young Swans fight furiously during the mating season. Athenæus, quoting Aristotle in the 'Deipnosophistai,' ix. 49, says that Swans are disposed to fight, and that they kill one another. The remarkable passage on the Swan in Hist. Anim. ix. 18, 2, has not been given above in full, but it recalls forcibly Portia's pretty speech, delivered when Bassanio is about to make his fateful choice of the caskets.

The Goose (*chen*) referred to by Aristotle appears to have been *Anser cinereus*, and perhaps *A. segetum*, which occurs in company with *A. cinereus* in Greece and Asia Minor. *A. albifrons*, which is about five inches shorter than *A. cinereus*, and four shorter than *A. segetum*, may be Aristotle's small *chen*. It is not uncommon in Greece during cold winters. Belon and Billerbeck regarded the *chen* as the Domestic Goose, and the small *chen* as the Wild Goose; and Sundevall identified the *chen* mainly with the Domestic Goose, and the small *chen* as *A. albifrons*. It may be mentioned that Aristophanes, with his usual charming drollery, assigns to the *chenes* the genial task of using their feet like spades in working the mud for the walls of Nephelococcugia, or Cloud-cuckoo City.

Aristotle's meagre references to *chenalopex* (the Fox-goose) can, fortunately, be supplemented by a passage in Herodotus (book ii. c. 72), which states that the *lepidotus* and eel of the Nile, and also the *chenalopex*, among birds, are sacred; and by a passage in Athenæus, ix. 52, referring to a kind of *boscades* larger than *netta*, but smaller than *chenalopex*. Pliny also says that *chenalopex* belongs to the family of Geese, and Ælian states that it has the appearance of a Goose, but is smaller and bolder. There is no doubt that *chenalopex* was the Egyptian Goose (*Chenalopex aegyptiacus*), which was emblematic of Seb, the father of Osiris, according to Rawlinson. The bird's name (*chenalopex*), and its corresponding Latin name (*vulpanser*), are appropriate to the Egyptian Goose, which, Rawlinson says, displays great courage and cunning in protecting its young; Ælian also says that it can be compared to the Fox in cunning. Schneider suggests that *Anas tadorna*, Linn., the Burrow-duck

or Sheldrake, may have also been included under the name *chenalopex*, on account of its breeding in hollows in the earth, like the Fox.

Much uncertainty exists respecting the bird called *aix* by Aristotle. Gaza and Belon translate the word as *capella*, or Lapwing (*Vanellus cristatus*) ; Billerbeck suggested that *Anas crecca* or *Scolopax gallinago* was meant, and Sundevall thought that *aix* was one of the small Geese; while Schneider, although translating *aix* as *capella*, says that Camus rightly advises us not to regard the bird as the Lapwing. Belon, describing *le vanneau*, or the Lapwing ('L'hist. de la nat. des Oyseaux, Paris, 1585), says that in his opinion this bird was called *aix* by Aristotle because, when screaming, it seemed to make a noise like a Goat, which says "aex aex." However this may be, the modern Greek for the Lapwing has no resemblance to *aix*, according to Contopoulos ; besides, Aristotle's *aix* was without doubt a water-bird, and may have been one which darted or flew rapidly (*aisso, aizo*, to dart, to move with a rapid shooting motion), such as the Pintail Duck (*Dafila acuta*), which is tolerably common in Greece and Turkey, according to Lord Lilford and Lindermeyer. The data are, however, insufficient for the purpose of identifying Aristotle's *aix* with any reasonable chance of success.

The Mallard, or Wild Duck (*Anas boscas*), which is very common in Greece, Turkey, and Asia Minor, is the *netta* of Aristotle. The male is larger than the female, and its plumage is more brightly coloured, according to Athenaeus, ix. 52 ; and Aelian says that the young *nettai* take to the water immediately after they are hatched.

In determining the species corresponding to *boscas*, Athenaeus may be consulted with advantage. He states (ix. 52) that of the birds called *boscades*, the male is marked all over with lines, is less than *netta*, and has a short beak which is disproportionately small compared with the size of the bird ; also that there is another species of *boscades*, larger than *netta*, but smaller than *chenalopex* ; and that the birds called *phascades* are a little larger than the Little Grebe, but resemble the *nettai* in other respects. From this it would seem that several species were included under the name *boscas*, and that the Wigeon (*Mareca penelope*) and Common Teal (*Querquedula crecca*) may have been two of

them. The beak of the Wigeon is comparatively very short, and the back and scapulars of this bird are finely vermiculated, especially in winter. Again, the Common Teal has the back vermiculated in a striking manner, and its beak, although longer than that of the Wigeon compared with the size of the bird, is rather short. Both these birds are abundant in parts of Greece in winter, according to Lord Lilford. Sundevall seems to identify the larger of Athenæus' *boscades* with the Sheldrake, the smaller one with the Wigeon, and the *phascas* with the Common Teal. Belon, on the other hand, gives *la sarcelle*, or the Teal, as the equivalent of *boscas* and *phascas*, and Billerbeck suggests that *boscas* was the Wild Duck.

The identification of the bird named *penelops* is much more difficult, the data being so scanty. Aristotle merely mentions it among the heavier water-birds, while Aristophanes, who refers to it at least twice, gives us no further information. I have not found anything in Athenæus and Ælian. Ion, however, applies the epithet "purple- or crimson-streaked" to a bird called by him *penelops*. Alcæus says that it has a variegated neck and long wings, and Ibucus that it is many-coloured, and has a neck of glancing or changeful hue. These statements of Ion, Alcæus, and Ibucus I have had no opportunity of checking, but they are given on the authority of Schneider, who was a very reliable scholar. Again, Stephanus ('Thesaurus Græcoe Linguae') gives a scholium on Aristophanes, which states that the *penelops* is like *netta*, but of the size of a Dove (*peristera*). Pliny speaks of certain birds, called *penelops*, being found in a lake in Africa, from which a certain river Crathis flowed towards the Atlantic (Hist. Nat. xxxvii. 11). Assuming that these notices refer to the same kind of bird—and such assumption is a bold one—it would appear that *penelops* was a lake or river bird with long wings, and variegated plumage in which purple or crimson was conspicuous, the neck being of striking brilliancy or variety of colour; in addition, there is the above-mentioned scholium, the value of which is uncertain. I know of no duck-like bird likely to have been known by Aristotle which answers reasonably well to this description. The Common Teal, with its moderately long wings, green, buff, and deep chestnut head and neck, and green, purple, and other colours of the wings, seems to approach nearest.

According to Aristotle, *phalaris* is one of the heavier web-footed birds living in the neighbourhood of lakes and rivers. Athenæus says it is rounder than *ouria*, and is ash-coloured below and somewhat black above. It seems probable that *phalaris* was the Coot (*Fulica atra*), as stated by Billerbeck, Schneider, and others. The Coot, it is true, has lobated feet, but would properly come under Aristotle's web-footed division of birds, as is clear from the passage previously quoted from Aristotle's 'Parts of Animals,' iv. 12. Belon, however, identified *phalaris* with *la piette*, by which he probably meant the Smew (*Mergus albellus*), and Sundevall follows him. The Smew is tolerably common in Greece in winter, but the colour of its plumage does not answer at all well with Athenæus' description of *phalaris*.

Colymbis—so called, as Athenæus says, from *colymbao*, to dive—has been identified by Gesner, Belon, Gaza, Schneider, and many others as the Latin *urinatrix*, or diver. Billerbeck appears to be undecided between the Pochard Duck and Goosander, and Sundevall argues strongly in favour of regarding *colymbis* as a species of Grebe. Sundevall's opinion appears to be correct, for Athenæus says that the little *colymbis*, which is the least of all aquatic birds, is of a dirty black colour, has a sharp beak, and dives much. This little bird is no doubt the Little Grebe, and it seems reasonable to conclude that *colymbis*, which Aristotle mentions among the heavier water-birds, was a larger Grebe, perhaps *Podicipes cristatus*, a bird very common in Greece and Turkey. The lobated feet of *P. cristatus* need present no difficulty in adopting this view, as is shown by Aristotle's 'Parts of Animals,' iv. 12, previously quoted. The Grebe is called *colymbos* by modern Greeks, according to Contopoulos. The *colymbis* might have included the Pochard Duck, which is fairly common in Greece and Turkey, but the passage in Athenæus on the little *colymbis* does not favour this suggestion. There appears to be far less reason for considering *colymbis* as a diver (*colymbus*), as understood by modern ornithologists, or as the Goosander, for none of these birds occurs in Greece except as a rare visitant, and even then only on the coasts, as a rule. Aristophanes does not say much about *colymbis*, but in the "Birds" Euelpides asks, "Who led the owl towards Athens?" and his fellow-villain of the play, Pisthetaerus, mentions

columbis as one of the birds which did so. It is scarcely likely that Aristophanes would try to introduce into this part of the comedy a bird probably unknown to the Athenian audience.

Aristotle's *laros* included more than one species of birds, and perhaps more than one genus. His descriptions point clearly to the Gulls, and possibly the Terns, of which collectively there are at least eight species common in Grecian waters. Belon seems to identify Aristotle's ash-coloured *laros* with the Common Gull (*Larus canus*), but Sundevall suggests that Aristotle used the epithets "ash-coloured" and "white" for young and adult Gulls respectively, the plumage of which differs, as is well known, according to age. It is scarcely possible to decide with any degree of satisfaction which birds were intended to be meant by the epithets, but the name *laros* may be fairly regarded as referring in particular to *L. canus*, and perhaps the Herring-Gull (*L. argentatus*), the Adriatic Gull (*L. melanocephalus*), and others. Modern Greeks still call the Sea-gulls *garroi*.

The identification of Aristotle's *aithyia* has caused much difficulty and some confusion, arising chiefly from the fact that Pliny describes, under the name *mergus*, a bird clearly intended to be Aristotle's *aithyia*, but represented by Pliny as nesting in trees, whereas *aithyia* nested among the rocks near the sea. Gesner gives *aithyia* as *mergus*, and repeats Pliny's statement that it nested in trees; while Belon similarly calls *aithyia* *mergus* or *plongeon de mer*. Gesner seems to have been thinking of the Goosander, and Belon of the divers. Amidst this confusion it is best to consider carefully what Aristotle says of the *aithyia*; it will then appear, as Sundevall suggests, that Aristotle's *aithyia* was probably none other than some species of Gull which nests among the rocks near the coast early in spring. *Larus leucophaeus*, the Yellow-legged Herring-Gull, which is very common in Greece, seems to answer well to this description. This bird nests on the rocks near the coast in some parts of Greece, and, according to Seeböhm, who visited its breeding-places on an island east of Cephalonia, its eggs are laid before the middle of April.

It will be seen that the identification of Aristotle's birds attempted to be made in this paper rests partially upon assistance given by two assumptions, *viz.* that the ancient Greek authors referred to the same kinds of birds whenever they

used the same names, and that the avifauna of Greece, Turkey, and Asia Minor, at the present time, may be taken as a guide in forming an opinion as to the birds known by Aristotle. It would be very difficult to determine to what extent reliance can be placed upon these assumptions, but the probability of comparatively extensive changes in the avifauna of the countries mentioned since Aristotle's time has been specially impressed upon me by H. Seward, Esq., B.A. Oxon, to whom my thanks are due for reading the manuscript. That changes in the avifauna of the countries mentioned have taken place since Aristotle's time cannot be doubted, but it would be reasonable to contend that the assumption previously mentioned is reliable as far as the common, or tolerably common, species mentioned herein are concerned.

In conclusion, the following table will show, in a convenient form, the chief results of this attempt to identify some of the birds mentioned by Aristotle :—

Greek Names.	English Names.	Scientific Names.
ἀπούς (apous) (=κυψελλός)	Common Swift.....	<i>Cypselus apus.</i>
	Alpine Swift.....	<i>C. melba.</i>
δρεπανίς (drepanis)	House-Martin (?).....	<i>Chelidon urbica.</i>
χελιδόν (chelidon)	Sand-Martin	<i>Cotile riparia.</i>
	Swallow.....	<i>Hirundo rustica.</i>
	Crag-Martin (?)	<i>Cotile rupestris.</i>
	House-Martin (?) ...	<i>Chelidon urbica.</i>
κύκνος (cycnos)	Whistling Swan	<i>Cygnus musicus.</i>
	Mute Swan	<i>C. olor.</i>
χήν (chen)	Grey Lag-Goose	<i>Anser cinereus.</i>
ὁ μεγάς χήν	Bean Goose	<i>A. segetum.</i>
χηναλόπεξ (chenalopex) ..	White-fronted Goose	<i>A. albifrons.</i>
αιξ (aix)	Egyptian Goose	<i>Chenalopex aegyptiacus.</i>
νῆττα (netta)	[Pintail Duck ?]	<i>Dafila acuta.</i>
βοσκάς (boscas)	Mallard	<i>Anas boscas.</i>
	Wigeon	<i>Mareca penelope.</i>
πτελέωψ (penelops)	Common Teal ?	<i>Querquedula crecca.</i>
φαλαρίς (phalaris)	[Common Teal ?]	<i>Q. crecca.</i>
κολυμβίς (colymbis)	Common Coot	<i>Fulica atra.</i>
λάρος (laros)	Great Crested Grebe	<i>Podicipes cristatus.</i>
	Common Gull	<i>Larus canus.</i>
	Herring-Gull	<i>L. argentatus.</i>
	Adriatic Gull, &c. ...	<i>L. melanocephalus, &c.</i>
αἰθύνα (aithyna).....	Yellow-legged Her- ring-Gull.	<i>L. leucocephalus.</i>

SOME FURTHER NOTES ON CHIPPED FLINTS AT YENANGYOUNG, UPPER BURMA.

By RODWAY C. J. SWINHOE.

IN the last volume of 'The Zoologist' (1902, p. 321) an account was given of two visits, made by Lt.-Col. Nichols, R.A.M.C., and myself to Yenangyoung, with the object of making further search for traces of early man in that vicinity, in consequence of the interest raised by papers published by Dr. Noetling on the occurrence of artificially chipped flints and a faceted bone, stated by him to have been found *in situ* in a bed of ferruginous conglomerate running round the Yenangyoung oil-field, and belonging to Pliocene, if not Miocene, age. Our second visit resulted in the discovery, practically at the place mentioned by Dr. Noetling, of a number of flint chips, not, however, in the Tertiary bed, but high above it, lying out on the surface of the plateau in such a way as to prove that these chips are of much more recent date than the Tertiary bed, and to have no connection with it.

On that occasion, however, we had so little time left to continue our search after coming upon these flints, that we were obliged to leave two important matters undetermined. The first was where the lumps of chert found partially or wholly chipped up came from, and the second was whether similarly chipped flints were to be found at other points on the plateau, or were confined to the neighbourhood of the place where Dr. Noetling found his.

These two matters have now been cleared up by a third visit which I was able to make to Yenangyoung not long after the publication of the previous paper in 'The Zoologist.' There is at Yenangyoung a plateau gravel, mentioned by Dr. Noetling as being peculiar in containing very large rounded stones, mostly of quartz, which must have come from a great distance, and have necessitated great carrying power to lay them down where they now are, probably some hundreds of miles from where they started.

This plateau gravel is conspicuously seen on the summit of the sand cliffs that abut on the left bank of the Irrawaddy at Yenangyoung, and is met with at other points inland. A new cart-road between Yenangyoung and Thittabwe (some two or three miles further down the river) is cut for part of the way through this gravel, and a good section is thus exposed.

As mentioned by Dr. Noetling, this gravel is chiefly composed of large pieces of rounded quartz, but an examination of it proved that it contains also fairly numerous lumps of chert, and is undoubtedly the source from which the men who produced the chips obtained their supply. The ground where the gravel exists is naturally hard and unpleasant to sit upon, being composed of large rounded stones, and it is clear that chert was obtained from the gravel, taken a short distance away to where the ground is soft and grassy, and there chipped up. At one place, not far away, I found a small collection of stones, among them several pieces of chert, and numerous chips of the latter, while a search in any direction resulted in the discovery of chips. So far from being confined to the neighbourhood of the place where Dr. Noetling found his, or to the places where the ferruginous conglomerate outcrops on the plateau, my experience was that it is impossible to walk anywhere about the oil-field, either inside or outside of the circumscribing band of conglomerate, without, sooner or later, finding these chips, sometimes few and far between, and sometimes in little bunches. Being for the most part merely fragments, while even the deliberately worked scrapers and other implements that are to be found are too inconspicuous to attract ordinary attention, they have remained unnoticed, and can be picked up among the oil-wells, lying where they have doubtless lain since they were made. One symmetrically shaped chip, which has the appearance of a diminutive scraper, or might be a roughly finished arrow-head, I picked up within fifty yards of the bungalow of the manager of the Burma Oil Company, as I was on my way to breakfast with him. Being a shrewd man of business, and an American, he was naturally unable to understand that I was only searching for stone implements, and was not spying out the land with a view to oil.

It was certainly a curious and instructive commentary on the progress of the world to be picking up the rough stone imple-

ments that represent the highest intelligence of primitive man in tool-making, while at my very elbow great 40 ft. steel borers were thumping their way for a thousand feet or more down through the ground to reach the oil-sands, and all around beam-engines were pumping the oil up to the surface. It is seldom, I think, that such striking representatives of ancient and modern industry can be seen at the same spot!

Mr. Oldham, of the Geological Survey of India, was with Dr. Noetling when they found some chips ; he has seen what I have collected, and has also been to Yenangyoung again, and picked up some more for himself, and there can be no doubt whatever that the pieces found originally by Dr. Noetling are identical with those that are found scattered about everywhere. As the plateau gravel, which is the source of the chert, rests unconformably on the Tertiary beds, the chips, apart from their position on the surface, can have no connection with the Miocene or Pliocene beds.

Dr. Noetling, although he was engaged for several months in making a detailed geological map of the oil-fields, and examined the plateau gravel, does not appear to have noticed either the fact that chips, identical with those mentioned by him, are scattered about everywhere in no inconsiderable numbers, or that the plateau gravel contains lumps of chert, besides quartz.

Not having myself had the opportunity at that time of examining any similar objects from India or elsewhere, I submitted several of them to Mr. Bruce Foote at Yercand, in Madras, and that gentleman had no difficulty in finding a similarity between them and objects of typical Neolithic age from sites in Bellary, Kurnoot, Gujerat, and Kathiawar. He judges them to be of late Neolithic or even early Iron age, but distinctly not Palæolithie. Three or four specimens are well-worked scrapers, of small size as compared with European specimens, but good examples of their kind, with regular "gasteropod" working faces and secondary chipping along the edge ; others are apparently scrapers of a larger and rougher kind, while specimens of peeling-stones and so-called sling-stones are to be found. Without, however, straining after resemblances, and striving to find uses for what may in some instances be merely accidental fragments, it is certain that among the chips are

many that are as deliberately worked human artifacts as any ground and polished celt. It is perhaps not to be expected that the best implements will be found at the place where the manufacture of them took place, as they would, it is reasonable to suppose, be carried off, so that only "rejects" would remain behind; but a further search over a more extended area in the vicinity of the plateau gravel is needed to ascertain how far this is true. If the Neolithic men required suitable stones for grooving hard wood or bone, for peeling the bark from arrow- or lance-shafts, scraping skins, &c., there does not appear to be any good reason why they should not have done the required work on the spot. There are no high hills in the vicinity except the extinct volcano Mount Popa, some twenty or more miles away; and if the stone-working men were a savage tribe living on the sides of this mountain, while the plains were inhabited by more civilized people, they could not have come down to the river to get the material for their implements. I have three ground and polished celts, kindly given to me by Mr. Berrill, from Kyukpadoung, that were found at the foot of Mount Popa, and it is probable that there were Neolithic men living on Popa, and using stone for their weapons, as there were on all the hills round Burma, while at the same time other men lived on the plains near the river, and used the chert which was found near at hand. They would hardly have chosen to live inland when they could live on the banks of a large river. So far the objects found are all small, and there is nothing that can be definitely called an offensive weapon, unless some of the specimens are arrow-heads, as they certainly may be.

The date of the stone stage of civilization must of course vary very much in different localities, but it would appear to be of some considerable age, even in the hills now occupied by more or less wild tribes around Burma, and would certainly be older in the case of peoples living on the plains.

Ground and polished celts, axe-heads, scrapers, and other objects are found in the Kachen Hills, to the north, in the Shan States, in the Chin Hills, and on the Upper Chindwin, and in Tenasserim in the south; but in no instance can any of the present inhabitants of these parts recognize in them the work of man. Universally they are considered, as in other parts of the

world, to be "sky-arrows," thunderbolts that fall during storms, and get deeply embedded in the ground, but gradually work their way up to the surface, so that they may sometimes be found actually on the surface; sometimes may be turned up from just beneath when cultivating their hill-crops (*taung-yas*), and sometimes are discovered when digging for bamboo-rats, still deeply embedded in the ground. How a thunderbolt can get into the shape of a shoulder-headed celt, and how it can work its way up to the surface, they do not stop to enquire; but the fact that they have lost all idea of these things being ordinary human implements seems to show that the Neolithic men, whoever they were, are separated from the present inhabitants of these hills and valleys by a considerable period of time. And this matter is all the more curious, seeing that at the present day many of these people use implements which are plainly lineal descendants of stone implements. Thus, as an example, the Shans use a hoe, now made of iron, which is often very little larger than its ancestor, the shoulder-headed celt, and exactly resembling it in shape, except that, in place of the solid stone haft that had to be fitted into a hole made either directly through the handle, or in a piece of wood that fitted into the handle, there is now a hoop of iron. This, however, is not at right angles to the blade, as in a modern hoe, but in continuation of it, exactly as in the stone hoe. This is sometimes fitted on to a short piece of wood, which is then fixed through a hole drilled in a long handle, or, more generally, so far as I could see, a handle is chosen with a fork at one end, resembling the brow-tine of an antler, and the iron hoe is fitted to this fork. The connection between the Neolithic men and the tribes at present living in these parts seems clear, but the lapse of time has been sufficient for the intervening history to be completely lost. The only person whom I met who seemed to have any idea that human beings had had a hand in making these implements was the late chief of the Shan State of Thibaw (Hsipaw), who, however, had paid two visits to England, and was consequently a somewhat enlightened man. He once told me that there were two kinds of these stone implements—one kind made by the *nats* (spirits), and dropped from the sky, and one kind made by men; that if you found one of the latter kind and smelt it, nothing would happen; but that if you did the

same with one made by the *nats*, blood would come from your nose, and you would die. There was, unfortunately, no means of telling which was which except by the result, so that it was as well to carry about an antidote, which would be found in a ring of pinchbeck, to be worn as an ordinary ring, and to be smelt as soon as your nose began to bleed.

History is not a strong point with Mongolian people, and it is perhaps useless to look to them for any account of the stone-using tribes whose implements they have copied in iron.

Yenangyoung is not more than a few hours' journey down the river by steamer from the ruined Buddhist city of Pagan, and, as the crow flies, perhaps not more than fifty miles, and it is hard to suppose that people so far back in civilization as to use flint scrapers and peeling-stones could be contemporaneous with the builders of that great religious centre, whose massive temples, unlike anything else east of the Euphrates, are still the wonder and delight of travellers. Yet, if there is any truth in the Burmese Royal Chronicle, the old kingdom established near Prome came to an end about 95 A.D., and the "Pyu," who formed a portion of that kingdom, fled to the north, and settled, under Thamudarib, nephew of the last king of Prome, at Nyoungoo, i.e. Pagan.

Whether Pagan was originally begun by settlers from the south, or from Tegoung on the north, it is undoubtedly an ancient site, and was probably a capital from the second century A.D. By the eleventh century it was certainly a celebrated city, with many fine temples, and was a centre of Buddhist learning. Polished celts have been found, if not actually on the site of Pagan, at any rate in the immediate neighbourhood; so that it seems clear that the Neolithic men in Burma—at any rate, those living on the plains in the vicinity of the Irrawaddy, and who are responsible for the polished celts, and the chert implements at Yenangyoung—must be referred to a date anterior to the Christian era.

Further search on the spot, and especially the finding of any drawings or carvings, may elucidate something more definite as to their date and identity.

BIRD NOTES IN SARK, 1903.

By E. F. M. ELMS.

THE following notes were taken between May 23rd and June 1st, during which time much enjoyment fell to my lot on this interesting and beautiful island.

Sark, seven miles E.S.E. of Guernsey, is not more than three and a half miles long, including Little Sark, joined only to Sark proper by the well-known Coupée, an isthmus or causeway of natural formation. The island at its broadest part is roughly one and a half miles wide, and has a very indented coast-line with precipitous cliffs, in some places about 250 ft. above low water-mark.

Some of the country is under cultivation, but the greater part is covered with gorse bushes, and divided up by numerous valleys, down which the little mountain streams hurry. The vegetation is rank and luxuriant, and, being so, it is a somewhat remarkable fact that certain birds were not noted that might have reasonably been expected to be abundant, and those few of certain species that were observed did not appear to be nesting freely.

I should not have been at all surprised to have seen the Wheatear, as at the northern part of Sark the country is quite suitable to its requirements, but not a single specimen was seen. Other notable absentees were the Redstart, Nightingale, Black-cap, all the members of the Wagtail family, Tree-Pipit, Spotted Flycatcher, Jackdaw, the Columbæ, and Gallinaceous birds. I fear it is an impossible task for me to try to assign any reason for the absence of most of them. Perhaps the close proximity of the sea may possibly account for some, and of course others may have escaped my observation.

But it is with the sea-birds that one finds more interest in Sark, and to visit them in their breeding haunts it is necessary to take a boat, and positively suicidal to attempt a visit without the help of a local fisherman. In fact, they would not, under

any consideration, allow visitors to go by themselves, for the strong currents, even on the smoothest day, are terribly swift and dangerous except to the thoroughly seasoned and experienced boatmen.

May 29th was the day selected for this pleasant excursion, and, though the sea was generally as smooth as an inland lake, we experienced one considerable "bucketing" when landing on L'Etac de Sark, but this was the only difficult landing of the day, and was due to the fact that the tide was ebbing.

After all such a trip is not really expensive, for it means about seven hours' work for the boatmen, and the charge is ten shillings, with an additional two shillings for the two men's lunch, and whatever little tip you care to give them on the conclusion of the journey.

I was much struck by the sociability of the various kinds of birds that were nesting in close proximity to one another, and it was to me an altogether new feature to hear of the Lesser Black-backed Gull and Herring-Gull occupying the same nest. Our boatmen spoke of it as quite a normal state of affairs, and seemed quite surprised to hear that it was new to us. We all know that there are a great many birds who are eminently sociable when carrying out their marital duties, and we have also many a time heard of two Partridges sharing a common nursery, and sitting side by side on their eggs; but the fact of two different kinds of birds, although closely affined to one another, laying in and occupying one nest was, to me, at any rate, altogether new.

On landing at Grande Moie, I saw a Lesser Black-back fly off, and, having climbed up to the nest, discovered therein two eggs; one, the larger, which the boatmen assured me belongs to the Lesser Black-back, is pale olive-brown in ground colouring; the umber spottings and blotchings are rather more confluent towards the middle of the egg, and also to a lesser extent at the larger end, and it has a few faint grey markings; while the smaller one is a pale greenish stone-colour, spotted and dashed pretty evenly all over the surface, and at the large end there is a scribbly streak somewhat after the fashion of the Guillemot's egg, and in this one, too, there are faint grey underlying blotches. These two eggs I have in my possession. I also found another nest, containing three eggs, the dark variety of which

was even darker than the one just quoted, and the other two almost the same as the lighter kind described; these I did not take, and have since regretted it, as it would have tended the better to substantiate the occurrence of these two birds nesting together. I do not altogether place too much reliance on the fisherman's statement, because I know very well that their information, though not actually perhaps fickle, is at all events sometimes a little inaccurate, and I should be very happy to hear some other observer's opinion as to whether this social and economical instinct has been noted in these two Gulls before, or whether it is that I have fallen into one of the many traps provided by the eccentricities of Nature for her youthful students.

The following is the list of birds, with notes on same, compiled during my visit:—

MISTLE-THRUSH (*Turdus viscivorus*).—Not so common as the next named, but met with several times singing from the tree-tops in various parts of the island. Found no nest of this species.

SONG-THRUSH (*T. musicus*).—Well distributed throughout the island, but always keeping well away from the sea. One individual sang from the trees opposite our windows punctually at daybreak, and again at night, right up to 8.45 p.m. on one or two occasions.

BLACKBIRD (*T. merula*).—Quite one of the commonest birds. Found nests with eggs in various stages of incubation. On May 24th a nest of four young ones in a furze-bush.

WHINCHAT (*Pratincola rubetra*).—Saw only one individual, and did not see the nest.

STONECHAT (*P. rubicola*).—This bird was quite abundant among the gorse on the western coast, and again in Little Sark, but was less noticeable in other localities which seemed to be equally suitable.

ROBIN (*Erythacus rubecula*).—Common. Saw two or three broods of young ones, and found deserted nest with five eggs in hollow in grassy bank at side of road near Beau-regard.

WHITETHROAT (*Sylvia cinerea*).—Rather rare. Did not see this species many times.

LESSER WHITETHROAT (*S. curruca*).—I fancy I saw this bird once near the Seigneurie grounds, but am not quite sure.

GARDEN WARBLER (*S. hortensis*).—Once heard one singing from the tangle at the side of road running through the Seigneurie grounds, and also saw one fidgeting about in brambles in the same neighbour-

hood. This bird seemed to have a nest, but I did not discover its whereabouts.

GOLDCREST (*Regulus cristatus*).—One sang from some firs close to where we were staying ; it was not a common species.

CHIFFCHAFF (*Phylloscopus rufus*) and **WILLOW-WREN** (*P. trochilus*).—A few in the neighbourhood of the Dixcart valley.

WOOD-WREN (*P. sibilatrix*).—Less abundant than the last two species.

HEDGE-SPARROW (*Accentor modularis*).—Common everywhere, seeming to have no special preference for any one locality, and met with often on the cliff sides.

GREAT TIT (*Parus major*).—More of these birds than any other members of the family ; saw a family among the bushes at the top of the Creux Derrible on May 26th.

BLUE TIT (*P. cæruleus*).—Not so many of these birds as might have been expected. No other representatives of the Parine birds came under my notice.

WREN (*Troglodytes parvulus*).—Very abundant everywhere on the island. Found several dummy nests, one built into the side of a furze-bush, and, as usual, none of them with any lining. On several occasions the Wren was heard singing quite close to the sea, almost as low down as the Rock-Pipit.

MEADOW-PIPIP (*Anthus pratensis*).—The breeding period, as a rule, must have been over, for I saw no nests of this species with eggs. They sang incessantly from the gorse-covered cliffs, launching forth into the air, and descending in their own peculiar parachute-like manner. On May 28th, on the cliffs above Havre Gosselin, saw a parent feeding one of its offspring. The youngster, just able to fly, perched on a spray of gorse, agitating its wings as though to balance itself, and the parent (I am not sure which sex) hovered in the air over the young one, and dropped what looked like a caterpillar into the opened mouth.

ROCK-PIPIP (*A. obscurus*).—Local name, “ Sea-Lark.” By far the most common kind of Pipit, and even perhaps more abundant than any other kind of bird, excluding of course the sea-birds. Spent much time trying to find the nest, but without success. The fishermen, though so familiar with this bird—a common species in the Channel Islands—were mostly ignorant of its nest and eggs.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

The Burmese Gaur, or Pyoung.—It has for many years been a question among naturalists whether the Gaur inhabiting the countries to the eastward of the Bay of Bengal could be subspecifically distinguished from the typical *Bos (Bibos) gaurus* of India. A head of a bull obtained from Myitkyina, in Upper Burma, by Mr. Joseph Reade, and mounted by Rowland Ward, of Piccadilly, which I have recently had the opportunity of inspecting, leaves little doubt that this question should be answered in the affirmative, so far as regards the Pyoung, or Burmese representative of the species. And if this be so, there can be little or no doubt that the Saladang (Slading), a Malacca form of the species, likewise belongs to a race apart from the typical Indian animal. It is true that the young bull from Penang, living in the menagerie in the Regent's Park in 1890, and figured by Mr. Blanford in the Zoological Society's 'Proceedings' for that year, did not show any well-marked features by which it could be satisfactorily distinguished from the Indian form ; but this may have been due to immaturity, and it has been stated that the adult Saladang is characterized by the rufous (instead of pure white) colour of its "stockings." Whether the Malay animal differs from the Burmese form of the species must, however, await further investigation.

In my work entitled 'Wild Oxen, Sheep, and Goats' reference is made to certain observations which tend to show that the skulls of Gaur from the countries on the eastern side of the Bay of Bengal differ somewhat from those of the typical Indian animal. The main difference appears to consist in the greater breadth across the forehead of the eastern skulls, some of which are, however, said to exhibit a certain approximation towards the Gayal type.

In the same work reference is made to certain observations of Colonel Pollok, to the effect that the Burmese Gaur is taller than the Indian animal, with the ridge on the shoulder extending further along the back, the concavity of the forehead more pronounced, and the

horns larger, heavier, and shorter, with the tips seldom worn. One other point requires mentioning before further reference is made to the new specimen. It used to be stated that the Gaur is characterized by the absence of a dewlap, and of many specimens this appears to be true. On the other hand, it is stated that in Travancore some of the old bulls display a very strongly developed dewlap, although their character is not constant in the district. More important still is a statement by Mr. C. W. A. Bruce, published in my work on the 'Great and Small Game of India,' &c., that the Burmese Gaur is always distinguished by the presence of a large dewlap in the old bulls, as well as by their very dark colour.

Unfortunately, Mr. Reade's specimen does not exhibit the whole of the throat, but sufficient remains to show not only that there was a well-marked dewlap, but that the upper portion of this, at any rate, carries a tuft of long black hair. Such a throat-fringe is quite unknown in Indian Gaur, and its occurrence in the Burmese form seems quite sufficient to indicate the racial distinctness of the latter. In the specimen under consideration the hair of the face is marked by a number of small light-coloured spots, very similar in hue to the light area on the forehead; whether, however, this is anything more than an individual peculiarity, I am unable to say. Very noticeable is a band of tawny hair immediately above the naked portion of the muzzle, which is always light-coloured in Gaur. A trace of this tawny band is observable in the plate accompanying Mr. Blanford's notice of the young bull from the Malay Peninsula, to which reference has been already made; but it is altogether wanting in the two mounted Indian Gaur in the British Museum, in which the whole of the hairy part of the muzzle is dark-coloured, with the exception of a small streak on each lip.

It may also be mentioned that the general colour of the hair of the Burmese head (both in the dark and light areas) apparently differs somewhat from that of Indian examples, although I have not had an opportunity of making an exact comparison in this respect. The horns, too, are distinctly different in appearance from those of Indian Gaur, being decidedly peculiar. In old Indian bull Gaur it is generally, if not invariably, the right horn that has its tip worn away by the animal constantly using this horn more than its fellow. In the Burmese specimen, on the other hand, it is the left horn that is thus worn. Whether this is anything more than an individual peculiarity, I am of course unable to say.

The foregoing comparisons seem to leave no reasonable doubt of

the right of the Burmese Gaur to rank as a distinct race, for which I propose the name of *Bos gaurus readei*, making as the type Mr. Reade's specimen (of which I hope to obtain a photograph later on). The distinctive features of the Burmese Gaur will be the large dewlap, furnished with a fringe of long black hair, and the band of tawny hair above the naked portion of the muzzle. Whether the Malay Saladang is or is not identical with this race must for the present remain uncertain. It is, however, noticeable that the aforesaid young bull from Penang shows a light-coloured area above the muzzle, and the absence of a throat-fringe in that animal might well be due to immaturity.—R. LYDKE (Harpden Lodge, Harpenden).

Mus sylvaticus wintoni in Suffolk.—On June 15th my cat brought in an example of this species or variety (*cf. ante*, p. 150), and on the 17th a second, both of which I sent to the Norwich Museum. They were fine specimens, measuring in the flesh nearly nine inches from the tip of the nose to the end of the tail, and, owing to the very cold weather, reached their destination in good condition. The cat by whom they were caught is very tender-mouthed, and nearly always brings in his captures uninjured, the only exception I have noticed being a fine cock Hawfinch, which he caught one day close to the front door. On this occasion the bird probably bit him sharply, as he had mauled it so as to render it useless. Should any readers of this Journal wish for a specimen of the large Field-Mouse in the flesh, and will write to me, I have no doubt that others will turn up, and I shall be pleased to send them on.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

A V E S.

White Wagtail (*Motacilla alba*) in the Isle of Man.—On May 3rd last I observed a party of about twelve birds of this species feeding amid cast-up and decaying wrack about high-water mark on the shingle of Castletown Bay. They continued for a week at least to frequent this locality. Mr. F. S. Graves saw a White Wagtail at Peel on May 19th, 1892, and Mr. J. Townsend reported in the 'Field' of April 29th, 1899, a pair seen at Port Erin in the spring of that year. These are, so far as I am aware, the only Manx records, but, as the species is traced on migration from Cornwall along the Welsh coast to the Solway, Clyde, and the Hebrides, its occurrence in Man is doubtless regular.—P. S. RALFE (The Parade, Castletown, Isle of Man).

Abundance of Swifts (*Cypselus apus*) in South Hants.—The summer visitors to this part of Hampshire have been very irregular and

uncertain in their appearance, arising no doubt from the changing and unseasonable weather we have experienced. For the most part all were late in coming, some as much as a fortnight behind the usual date of arrival, and of several species the numbers were much below the average. The Spotted Flycatcher, the Nightingale, and other Warblers seem normally represented, but the Corn-Crake has scarcely been heard at all, and, as far as I can learn, the Hobby is entirely absent ; whilst the Cuckoo, Nightjar, Yellow Wagtail, and others are certainly not so abundant as they are some seasons, and the Swallow tribe are decidedly scarce compared with former years, the continued chilly atmosphere causing most of them to flutter about in a semi-dazed and benumbed manner. The most abundant appear to be the Swifts, of which there are more than I ever remember seeing ; they literally swarm in sheltered situations, hundreds of them being on the wing at the same time. Is it possible the migration further north was hindered by the cold winds prevailing at the time of their arrival, and that consequently we in the south have a double or triple share ? It is quite evident not one-tenth of the number nest in the neighbourhood, and I am informed the birds are equally abundant in East Dorset. If the poor birds have the power of recollection—which from personal observation I have every reason to suppose they possess—this cold season must have deceived their best anticipations, for in the evenings, instead of their joyous, happy squeal as they dash in winged ecstasy near their nesting-places in the old thatched gable, we see their ebon, cross-like forms against the grey sky as in silent pendulizing flight they glide to and fro in the rain ; and, as the night approaches, there is none of their well-known soaring, with screaming lay, into the space where “daylight dies,” but they cling in clusters about any tall building, and not a few perish. This clustering habit is very peculiar, some of the festoons thus formed being from eighteen inches to two feet in length, sometimes the outer and more benumbed individuals dropping down from the general mass. The appearance reminded one somewhat of the habit of the Hive-bee (*Apis mellifica*) when wax-forming. Since the finer weather the Swifts are much more dispersed. It would be interesting to know if they have gone further north.—G. B. CORBIN (Ringwood).

Note on the Kestrel (*Falco tinnunculus*).—Some time ago a game-keeper brought me a Hawk, of the name of which he professed to be ignorant, possibly with an idea that the value of the bird would be increased thereby. It was one of the best plumaged male Kestrels I had ever seen, both in colour and feather, the usual ash-grey of head and

tail being a decided blue, the black band of the tail appearing more conspicuous from the whiteness of the tip, and the fawn-colour of the back seeming to have a pink or rose-colour sheen above its sparsely spotted perfection. The man volunteered the information that he had seen it strike down a Wood-Pigeon (*Columba palumbus*), and in confirmation of this extraordinary statement he said he had baited a trap with the Dove, and so secured the Kestrel, which had devoured some portion of the quarry. If the Pigeon had been knocked down by any bird of prey, in all probability it was by the impetuous dash of a Peregrine Falcon; and as to the Kestrel having eaten any portion of it, the dissection of the supposed murderer proved quite the contrary, as no bird-remains were found in the stomach, but a mass of broken and half-digested legs, elytra, and other hard parts of several beetles, and two or three empty skins of medium-sized lepidopterous caterpillars, too much pressed and torn to distinguish the species; amongst it all were the lower jaw-bones of some small rodent—Mouse or Shrew—and, what appeared to me rather remarkable, some pieces of flint, parts of which were worn quite smooth, and such as one would expect to find in the gizzard of a gallinaceous species; had they been small and "gritty," I could have supposed they had been swallowed within the body of some small bird the Kestrel had taken, but their size militated against such a conclusion, as some of the stones were nearly as much in diameter as a threepenny piece. I do not recollect ever finding anything like it in any kind of Hawk before (that is no reason, however, that they do not thus occur); but do carnivorous birds require "grit" to promote digestion? Beyond a broken leg the bird seemed uninjured in any way; had its plumage been dirty or displaced one might have thought that in its struggles to release itself from the trap it might have picked up the stones, but in such a case I suppose they would have been found in the "crop," and not in the stomach.—G. B. CORBIN (Ringwood).

Rough-legged Buzzard and Montagu's Harrier in Derbyshire.—On March 11th a Rough-legged Buzzard (*Buteo lagopus*) was trapped on the moors between here and Sheffield. At the same time there was a Montagu's Harrier (*Circus cinereus*) on the same moor, and one or both these birds had been destroying a considerable number of Grouse. The Harrier was shot towards the end of April.—W. STORRS FOX (St. Anselm's, Bakewell).

British Grey Geese.—I have read with great interest the recent articles in 'The Zoologist' (1908, pp. 41–52), and in the 'Field' of various dates, on British Grey Geese, by Messrs. Frohawk, Coburn,

&c., and would like to make a few remarks on these articles. To begin with, I will take the Pink-footed Bean-Goose.

PINK-FOOTED BEAN-GOOSE (*Anser brachyrhynchus*).—As I have said before, I do not believe there are two species found in this country. Since my letter in the 'Field' on Dec. 6th, 1902, when I gave the weights of some of these Geese, I have obtained two which were heavier than any of those I then mentioned, one weighing $7\frac{1}{2}$ lb., and the other $7\frac{1}{4}$ lb. Mr. Frohawk, in his article in the 'Field' on Dec. 20th, 1902, written in reply to my letter of the 6th, seems to lay great stress on the number of laminae in the bill; but I think in a later article he has come to the same conclusion as I did some time ago, that the number of laminae is nothing to go by. In the former article he says that *A. brachyrhynchus* never has more than twenty-one laminae on each side of the bill, and that if more are present the Goose is *A. neglectus*, and not *A. brachyrhynchus*. In support of this statement he quotes the opinion of Mr. Serge Alpheráky, the Russian ornithologist.

In my large Goose which I mentioned in the 'Field' of Dec. 6th, 1902, there were twenty-three laminae on one side and twenty-one on the other side of the bill. The colouring of the carpal and lesser wing-coverts varies very much in the Pink-footed Goose, as also does the colour of the whole bird. A specimen which I shot on Jan. 21st, this year, is almost black on the wings, instead of bluish grey, but still it has twenty-one laminae on either side of the bill, and weighed $6\frac{1}{2}$ lb. The length of the bill in my large Goose was more apparent than real, owing to its slimness, but really it was only $\frac{1}{4}$ in. longer than most specimens, measuring $1\frac{1}{4}$ in. instead of $1\frac{1}{2}$ in., which is nowhere near $2\frac{5}{16}$ in., the length of bill in the new species, *A. neglectus*. I agree with Mr. Boyes in saying that there is much variation in the colour of the feathers, according to age. My specimen with the large triangular head and thin beak was a very light-coloured bird, an adult male, number of laminae twenty-three and twenty-one, weight 7 lb. Another specimen, an adult male, was very dark in colour, and had twenty-one laminae on each side; weight, $6\frac{1}{2}$ lb. Another dark-coloured specimen had the same number of laminae, and weighed $7\frac{1}{2}$ lb.; this was an adult female. Two other light-coloured specimens, a male and female, weighed respectively $7\frac{1}{2}$ and 6 lb. I did not count the laminae in the former, but in the latter they numbered twenty-one on either side. A young specimen, a male, was also light-coloured, had twenty-one laminae on one side and twenty on the other, and weighed 5 lb. 2 oz.

The bluish-grey birds are more numerous than the dark-coloured ones, the proportion, as far as those which I myself have shot, being

about six to one in their favour. The difference in colour is not due to sex, as I have shot male and female of both varieties; neither is it due to age, as I have shot old and young birds of the light-coloured variety, and also of the dark-coloured. The White-fronted and Bean Geese vary as much, or even more, in colour than the Pink-footed species.

THE WHITE-FRONTED GOOSE (*Anser albifrons*).—I will describe three birds in my collection, all of which I obtained in the Hebrides during the past winter. They all have the white line under the eye, although in No. 3 it is dusky white.

No. 1.—White on forehead and face typical; breast white, and covered with brown spots; weight, 5 lb. 8 $\frac{1}{2}$ oz.

No. 2.—White on forehead very much extended, reaching to the top of the head; white on face typical; breast slightly barred, but not nearly so much as on some specimens I have seen. Smaller in body than No. 1, but almost the same weight, 5 lb. 8 oz.

No. 3.—No white on side of face or forehead at all, only a very few white specks round the base of the bill. Breast dusky white, with no spots or bars. Weight, 4 lb. 4 oz. The head of this bird was enormous and very triangular, the neck very long, and it was much larger in body than either of the others, although it weighed less, but still it had the typical bill with the white nail of the species,* and the orange-yellow legs and feet. Some White-fronted Geese I have seen have been so heavily marked on the breast with black bars that they appear to have jet-black breasts. Unfortunately I have not one of these specimens set up. I take them to be fully adult birds. Messrs. Coburn and Gurney seem to recognize three British species of this Goose, viz. *A. albifrons*, *A. erythropus*, and *A. gambeli*. As with the other species of Grey Geese, I think the variations in plumage are due to age. In my three specimens mentioned above, I call No. 1 a three-year-old, No. 2 a four-year-old, and No. 3 a bird of the year. I do not think they have the heavily barred breasts until six or seven years old, or even older. I suppose that Messrs. Gurney and Coburn would call No. 1 *albifrons*; No 2 *erythropus*, on account of its small size and the large amount of white on the forehead; and No. 3 *gambeli*, on account of its larger size, heavy head, and long neck, although the colour of the breast does not agree with their description of this so-called species.

THE BEAN-GOOSE (*Anser segetum*).—The Bean-Goose seems to be

* The bill was not quite typical in No. 3. The nail was white at the base and black at the tip; half-white and half-black.

a still greater puzzle to some ornithologists. Mr. Frohawk (*ante*, p. 41) describes the two supposed species *arvensis* and *segetum*, and gives drawings of the bill. He says that *segetum* is the rare species, and that *arvensis*, with the band of white feathers at the base of the bill, is the common British species of Bean-Goose. Has Mr. Frohawk got his numbers mixed? Should plates iii. and iv. with the white band be *segetum* and not *arvensis*, and *vice versa*? I ask this question for a very good reason, *viz.* that the few Bean-Geese that have passed through my hands have had no white band, and therefore must have all been the rare species, *segetum*! Of course, compared with the Pink-foot, White-fronted, and Bernicle Geese, I have not had much to do with the Bean-Goose, but still the fact remains that the few I have handled have had no white band, and, according to Mr. Frohawk's plates, must have been specimens of *segetum*. Of course I do not believe for a moment that there are two species of Pink-foot and Bean and three of White-fronted Geese occurring in this country. I think that the variations in plumage are merely due to age, and perhaps sex may also have something to do with it, although I rather doubt this latter statement after my observations on the Pink-footed species.

Mr. Coburn gives an example of *arvensis* which had no white band of feathers at the base of the bill, as mentioned in Mr. Frohawk's article (*ante*, p. 41). This shows that there are variations between the bills of *segetum* and *arvensis*, which makes me more confirmed in saying that there is only one species of this Goose. We might as well make out this example to be yet another species. Again, Mr. Frohawk says that in *A. segetum* there are, as a rule, no white feathers at the base of the bill, excepting in old birds, where a small frontal patch of greyish white may occur. More variations between the so-called two species. I should rather say that the white patches at the base of the bill in the Bean-Goose are a sign of immaturity, and not of old age.

Mr. J. M. Pike's letter in the 'Field' (Dec. 20th, 1902) shows, again, that there are variations between *segetum* and *arvensis*. The following is an extract from his letter describing *A. arvensis* :—"The bills of the better defined specimens are orange-yellow, with the exception of the nail, an elongated heart-shaped piece running up towards the feathers, and the ridges of the indentations beneath; these are black. This agrees with Mr. Frohawk's statement, *but it is limited to the better defined specimens.*" He goes on to say :—"The amount of yellow on the bill varies considerably, to such an extent that it appeared possible that a complete series from the single band seen in *A. segetum* to the nearly all yellow of *A. arvensis* could be obtained."

He then mentions his five examples of *A. segetum*, shot in Holland out of a flock of six. Note the number of the laminæ in four of them, given in Mr. Frohawk's article in 'The Zoologist':— 1. Ad. ♂. Laminæ each side, 21. Bill, 2 $\frac{3}{4}$ in. 2. ♂. Laminæ each side, 24. Bill, 2 $\frac{4}{5}$ in. 3. ♀. Laminæ each side, 21. Bill, 2 $\frac{1}{2}$ in. 4. ♀. Laminæ 22 left and 21 right. Bill, 1 $\frac{1}{2}$ in. There is some variation here in the so-called *A. segetum* alone, which shows that in the Bean, as well as in the Pink-footed Goose, the number of laminæ, as well as the length of the bill, varies a good deal. To identify the Bean-Goose at a glance, I always look for three things, *viz.* the yellow legs, the black nail, and the orange band on the bill. Mr. Frohawk now tells us that this orange band is only found in *segetum*, the rare species, and that the upper mandible in the beak of the common species, *arvensis*, is almost wholly orange-coloured.

A statement by Mr. J. H. Gurney, mentioned in Mr. Coburn's article (*ante*, p. 46), shows the current tendency to create new species. It is as follows:—"And as long as the slightest difference in colour—even to the colour of an eyelid—can be found, combined (as it is in this case) with some difference of habitat, surely such birds ought to be kept asunder." This statement, I think, is indefensible. We might breed hundreds of new species of birds every year. If every variety of a bird is to be called a new species, the science of ornithology is limitless. All the fancy varieties of the Pigeon are far worthier of classification as distinct species than these little differences, say, between *A. brachyrhynchus* and *A. neglectus*, or *A. segetum* and *A. arvensis*. I might say that all my observations on these Geese have been taken not from museum specimens, but from freshly shot birds, and I have several times kept winged birds of the Pink-footed, White-fronted, and Bernicle Geese alive for short periods, in order to study them. I may be wrong, but Mr. Frohawk's remarks on these Geese seem to show that he has studied museum specimens, and got his other information secondhand from fowlers in different parts of Europe. It would be very interesting to have Mr. J. G. Millais' opinion on Grey Geese.

My acquaintance with the Grey Lag-Goose is almost *nil*, but I hope to know it better this winter. Mr. Coburn mentions the late Mr. Ernest C. Tye's opinion on his Red-billed Grey Lag-Goose. Although Mr. Tye may have been a very keen wildfowler, I think, from his articles, that his experience may have been limited to about three days' shooting in the year, *viz.* on Christmas Day, Boxing Day, and New Year's Day; so, as far as practical experience goes, if such was the case, his opinion

was not indubitable. Of course, the Mr. Tye I have in my mind may not have been the same gentleman mentioned by Mr. Coburn.

It may be of interest to state that last winter, on two certain little islands adjoining one another in the Hebrides, I came across all the British Geese with the exception of the Pink-footed species, White-fronted and Bernicle being especially very numerous. Two pairs of Grey Lag-Geese are nesting on one of these islands now. Besides these there were a great many Swans, Bewick's chiefly, but a fair number of Whoopers also, with a few Mute. In another part of Scotland I saw more Pink-footed Geese than in any previous winter; there must have been between four and five thousand of them in this place alone.

I trust that some authority will settle this question on the Geese once and for all, and show that really there is but one species each, of the Pink-footed, Bean, and White-fronted Geese.—H. W. ROBINSON (Lansdowne House, Lancaster).

Anser rubrirostris. Dr. Radde's Evidence.—M. Sergius A. Buturlin is to be thanked for the interest he manifests in our Wild Geese; his desire to see that all references are correct is most laudable, but, if the citation he gives us in German from the late Dr. Radde's work on 'The Birds of the Mainland of North-East Siberia' (*ante*, p. 288) has been correctly printed, it must have sorely puzzled all who have read and translated it. As printed, the quotation does not appear to me to be in very graceful German; a little transposing, however, would make it read thus:—"Auch an diesem Vogel sehe ich um die Oberschnabelbasis einen recht eclatanten rothbraunen* Ton sich verbreiten, der zu brennenden Fuchsroth gesteigert wird (und reicht bis) auf einem schmalen, vielfach von weissen Federchen durchsetztem Bande welches die Schnabelbasis einfasst. Ausserdem (*i. e.* with this exception) war der ganze Schnabel dieses Vogels schmutzig weiss." This, freely translated, would read thus:—"Also (or again) in this bird I notice around the base of the beak a very marked rusty-brown (or red-brown) colour, which becomes a burning (or flaming) fox-red, and this reaches up to a small band with numerously interspersed white feathers, which surrounds the base of the beak. With this exception the whole of the beak was of a dirty-white colour."

Here then M. Buturlin supplies us—apparently quite unconsciously—with a perfect confirmation of the accuracy of Count Salvadori and Dr. Bowdier Sharpe's translation of Dr. Radde's words! Indeed, no

* Perhaps in the original this is rothbraunen=red-brown.

person who had seen a recently killed specimen of this bird could place any other interpretation on them. The suggestion that Dr. Radde referred to a band of flaming red feathers on any part of the body of a Wild Goose must be instantly dismissed. It is clear to me that Dr. Radde gave his description from a bird which had been dead for several days. The whole of the colours gradually faded from the bills of my five birds, leaving them of a dirty-white colour, but the space occupied by the brightly coloured crescentic-shaped band remained distinct on the bill for a very long time, and can be faintly traced even now. The most important confirmation of my observations on the colours of soft parts in this bird is that of Mr. Stewart Baker, quoted by me (*ante*, p. 49), a gentleman who has seen the living birds.—F. COBURN (Holloway Head, Birmingham).

[We have printed the above letter in deference to Mr. Coburn, but the quotation given by M. Buturlin is not only correctly printed, but was compared at the time and found to be verbatim with the remarks of Radde. Whether Mr. Coburn is justified in transposing the original words of Radde into more "graceful German," and then "freely translating" same, is of course an open question.—ED.]

Pintail inland in Cheshire.—Shortly after sending you my previous note on this subject (*ante*, p. 229), I had an opportunity of examining a Pintail drake which was shot on the pool at Toft, near Knutsford, in the spring either four or five years ago. The bird is in the possession of a gamekeeper, who had noticed it for a fortnight or more on the pools at Toft and Norbury Booths before he shot it. He assures me that he used to see the Pintail daily in the company of a Mallard duck, with which it had paired. When the Duck had laid and begun to sit he took the eggs and put them under a hen. The young hybrids naturally showed no trace of their father's handsome plumage, and as they only differed from their companions, some young Mallards, in having nearly white under parts, the keeper did not attach any value to them. Unhappily they were turned down on the pool with the other Ducks, and were shot in the autumn.—CHAS. OLDFHAM (Knutsford).

Note on Shoveler (*Spatula clypeata*), &c., in Valley of Avon, Hampshire.—This handsome species is said to have bred in this neighbourhood more than once, but I have never been able, from personal observation, to confirm the statement, although I have on several occasions seen some very immature birds, as far as plumage is concerned, but none so young that they were unable to fly. As a winter visitor its numbers are rather uncertain; some three or four years ago I knew of ten or twelve having been killed upon a piece of water of no

very great extent, but that occurrence was exceptional, and half that number is nearer the average. Last year, throughout the spring months and well into the summer, a pair frequented a large piece of meadow-land in the vicinity of the river, and near a wood, but whether they nested or not I am unable to say, but I was informed that the male was not noticed after the middle of June, a date I imagined far too advanced for any Duck to go north for nesting. I believe the male of this species doffs his gay plumes after nesting, like the ordinary Mallard, and it is possible he is overlooked in his more subdued dress. It may here be mentioned that the river and almost every foot of its environs are under the strict watch of the game-preserved, very different to what it was in my bird-nesting days. This season the birds are still in the neighbourhood, having been seen in pairs at three different places, especially during April and May, and on one occasion three males were seen together. Last winter I knew of only two or three being shot, and those not in the locality where either pair were seen. Whilst on the subject of wildfowl of the Avon, it may be interesting to note that last winter, although the weather was so mild and open, I knew of at least three Gadwall (*Anas strepera*) being met with on one shooting where the species is very seldom seen, and some eighteen or twenty of the Pochard (*Fuligula ferina*) were killed where in previous winters it had almost disappeared. Wigeon (*Mareca penslope*) and Teal (*Querquedula crecca*) were not abundant; Wild Duck (*Anas boscas*) were about of normal quantity, but Golden-eye (*Clangula glaucion*) and Tufted Duck (*Fuligula cristata*) were few and far between, and I knew of but one Pintail (*Dafila acuta*). Two or three Bitterns (*Botaurus stellaris*) were seen, and I am glad to say their lives were spared. It is gratifying to know that the Redshank (*Totanus calidris*) nests in several places hereabouts, where a few years ago its presence was comparatively rare.—G. B. CORBIN (Ringwood).

Redshank carrying her Young.—A relative living at Orford, Suffolk, told me a short time back that he had lately seen a Redshank (*Totanus calidris*) carrying a young one in its feet. The bird flew close over him, and he saw distinctly the chick held underneath her. This was at some little distance from the river, and the bird was probably conveying her young from the breeding-ground to the saltings and marshes by the river.—G. T. ROPE (Blaxhall, Suffolk).

Variation in the Guillemot.—Having no opportunities here of obtaining Guillemots, I thought it best to return the curious specimen (*cf. ante*, pp. 158, 194, 280) to Dr. Saxby, and still believe that it is a

hybrid between the Common and Brünnich's Guillemots. Whether the Icelandic breeding-grounds of the two species overlap I do not know, but the bird in question, which Dr. Saxby sent me in the flesh, was very thin, and gave me the idea of being a storm-driven wanderer. I just missed getting the Cambridgeshire Brünnich's Guillemot which we have here (*cf. Zool. 1895, p. 109*) in the flesh, but should imagine that no two birds could be found more similar in size, structure, and habits than the two species of Guillemot, and more likely to interbreed. We have here a hybrid between the House-Sparrow and Tree-Sparrow (*cf. Zool. 1894, p. 111*), and the interbreeding of Pied and White Wagtails is not uncommon. Should Dr. Saxby ever obtain another Guillemot like the one he kindly sent me, and which I felt all along ought to have been in his own possession, no doubt he will record it; but my own impression is that he will not soon meet with a similar one.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

Birds and the Resonance of War.—I remember reading, after the termination of the Franco-German war, and the fall of the Commune, that birds had been scared from the neighbourhood around Paris by the sound of the heavy firing, and the farmers had consequently suffered from a multiplicity of insect-foes. I had always concluded that such an occurrence was inevitable where the din of warfare had abounded, and have been considerably surprised by meeting with what appears to be somewhat contradictory evidence in the annals of the recent war in South Africa.

Thus at the battle of Colenso, or Tugela River, very heavy firing took place, and, in the words of a bandsman, “*the crescendo* in Rossini's ‘William Tell’ was fairly eclipsed by the effect of the guns.”* Mr. Bennett Burleigh, writing on this engagement, says:—“The battle proceeded with undiminished fury; yet, as in all big actions, there were those unaccountable and strange lulls, when the sound of conflict drifted into silence, *the birds took up their songs*,” &c.† (the italics are our own).

Again, during the siege of Ladysmith, Chief Engineer C. C. Sheen, R.N., writes:—“The gum-trees were full of the hanging nests of the Weaver-birds, or South African Canary, as the inhabitants called them; and the presence of these pretty little birds in the camp seemed to lend an air of security and peace to the surroundings, in spite of the incessant scream and splash of the shells, as they passed

* ‘The Epistles of Atkins,’ p. 51.

† ‘The Natal Campaign,’ p. 201.

sometimes close over the camp, sometimes a few yards away on the road in front of it, according as they were directed," &c.*

Can some of our military readers support these statements from their own experience? or have others met with similar records in their readings?—W. L. DISTANT.

Ornithological Notes from Guernsey.—Since writing on the Birds of Guernsey (*ante*, p. 281), I have added the following notes:—

BLACK-THROATED DIVER (*Colymbus arcticus*).—On May 10th I obtained an immature male of this species, picked up dead on the beach near Cobo. It was in very poor condition, and had evidently died of starvation. This is an interesting record, as the species has only once been recorded before from Guernsey.

PUFFIN (*Fratercula arctica*).—On May 31st I visited some rocks off Herm, known as the "Humps," and found the Puffins breeding there in thousands. The soft ground was fairly riddled with their holes. No young birds were found, but only highly incubated eggs. Besides Puffins there were Razorbills, Guillemots, Stormy Petrels, and Herring-Gulls, all breeding.

SANDWICH TERN (*Sterna cantiaca*).—I have found this species fairly plentiful here, and I know places where it breeds.

KENTISH PLOVER (*Egialitis cantiana*).—This bird, if not common, is found in some numbers on several parts of the coast, and I know where it breeds.—GORDON DALGLIESH (Clairval, Collings Road, Guernsey).

Sea-birds inland.—During the months from early autumn to late spring it is well known that various coast-loving birds—especially the Gull family—often frequent inland waters, or even fallow-fields and ploughman's furrows, want of food, storm, and tempest driving them from their favourite haunts by the sea, and doubtless the rough cold weather of April, May, and the first half of June, together with the continued rains and consequent floods, account for the unusual number of such species as have appeared amongst us this season, the Black-headed Gull (*Larus ridibundus*) having been particularly abundant. Very few people in this neighbourhood—even those in the habit of carrying a gun—were acquainted with the species in its nesting-dress, and their occurrence has excited considerable interest and many inquiries as to their origin and purpose here. It is pleasant to know that of late years the species has showed a decided increase in numbers, and with this consideration their occurrence perhaps is not remarkable, as I understand a colony of the birds exists at no greater

* 'Naval Brigades in the South African War, 1899–1900,' pp. 212–18.

distance than the neighbourhood of Poole, and we are well aware *ridibundus* has no particular preference for salt water, but their presence here in such numbers at the time of nidification is very unusual. Amongst them were a few Kittiwakes (*Rissa tridactyla*), Herring-Gulls (*Larus argentatus*), and perhaps still fewer of *L. canus*: but the most remarkable occurrence was the capture of a Guillemot (*Uria troile*), in full breeding plumage, on a small stream at Verwood (Dorset), just over the Hampshire border; whilst two Razorbills (*Alca torda*) were found dead, one near Fordingbridge, the other in the forest, both apparently starved to death, and too decomposed for preservation. More than one species of Tern (*Sterna*) oftentimes are seen on the river in their spring migration, but this season none have appeared.—G. B. CORBIN (Ringwood, Hants).

Extinction of the Kite: a Correction.—I regret that, owing to a misplacement of quotation marks in my note upon this subject, several statements are attributed to Mr. R. J. Ussher for which that gentleman is in no way responsible.—J. H. SALTER.

AMPHIBIA.

Natterjack Toad in Suffolk.—On June 17th, when at Wortham, within a mile of the river which there forms the Norfolk and Suffolk boundary, a boy called my attention to "a funny frog." It proved to be a beautiful little Natterjack Toad, about half-grown. This is, I think, a new locality for this species.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

NOTICES OF NEW BOOKS.

Nature Studies in Australia. By WM. GILLIES, M.A., and ROBT. HALL, C.M.Z.S., &c. Melbourne: Whitcombe & Tombs, Limited.

THIS is a truly bionomical book, and shows that Australian naturalists are also pursuing that observational method which may be described as "back to nature." The irony of the procedure, however, is that though the wholesome principle is enunciated that we should observe animals ourselves, rather than read about them in books, nearly every original observer publishes a book himself, so that the literature is more ample than ever. Still the number among us who can either see or think for themselves is, and must ever be, so minute, that we are thankful for such publications ; to be independent of them would constitute the standard of a Darwin.

The method of the book is of the conversational style, somewhat recalling Dr. Johnson and the immortal Boswell ; but one cannot read a page without meeting with a new suggestion, or the enunciation of little known facts. In our last issue (*ante*, p. 288), attention was drawn to a recent proposition that each breeding bird was occupier of a certain plot of ground. Our authors describe the same thing in Australia, where rival Cuckoos are seldom seen fighting. "They seem to have so arranged their areas of action as to map out all the Cuckoo-region systematically. In imagination you can pass from call to call all over this wide region of wood and pasture."

In concluding a notice of this interesting book, we must allude to the "Common Names of Australian Birds," which are given as appendix. The danger of these cognomens to any non-ornithological observer can well be appreciated by two citations :—

Crane (Blue)	...	...	White-fronted Heron.
Heron (White-fronted)	...	...	Blue Crane.

The Fauna of British India, including Ceylon and Burma.
Edited by W. T. BLANFORD. Hymenoptera—Vol. II.—
Ants and Cuckoo-Wasps, by Lieut.-Col. C. T. BINGHAM.
Taylor & Francis.

DR. BLANFORD is to be congratulated on the steady issue of his volumes ; of course no exact regularity can be maintained, but the series of volumes already issued are an important contribution to a knowledge of the fauna of British India. In an age when biology demands philosophical conclusions, these books play a prominent part, though they are as a rule purely technical. A species must be known and recognized before any accurate observation can be recorded about it, and therefore we must cheerfully labour as descriptive hodmen before that golden age arrives when the weary describer will be at rest, and remembered only as a worthy writer of necessary muniments.

Col. Bingham has made the Indian Hymenoptera a special study, and his book can therefore be received as authoritative. It is on this ground that we feel sorry to read that he is now leaving the Hymenoptera, about which so much is to be told, to write the account of the Indian butterflies, about which more is known. We trust, however, that he will complete both tasks.

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FIELD NOTES (BEING A NATURALIST'S DIARY OF
OBSERVATION AND REFLECTION).

BY EDMUND SELOUS.

1899.

September 28th.—A Green Woodpecker this morning flew down on to one of the flower-beds in my garden, and was there some time. The flowers, however, prevented me from seeing, and when I tried to stalk it, it saw me first and flew off. My garden and meadow is part of this Woodpecker's preserve, and as the open sandy space, which I have called the amphitheatre, is just opposite my house, across the river, and as I have seen the bird that there haunts fly to some trees only a little beyond my boundary, I fancy that the two are identical, making one individual who hunts round, daily, in a moderately wide circle. Most animals, I suppose, have their regular hunting-grounds. This seems to be the case with Tigers in India, however extensive and varied and liable to sudden and complete change their field of operations may be. It is the same, no doubt, with Lions, who would, probably, not wander beyond a certain district they were accustomed to if the game in it did not become scarce. Thus we have the great instinct of conservatism which in beasts shows itself much in this way. The right path for them is the one in which they have been accustomed to roam. To change it requires an effort which, till some force arises sufficiently powerful to compel them to make, they will not make—and so with men. Change is, in fact, a great discomfort; even when it makes no

difference to us outwardly, yet to think of it is upsetting to the mind. So the world moves slowly, but the wonder, perhaps, is that it moves at all.

I was watching some Swallows to-day flying about over a sandy meadow, when a white butterfly that looked like a belated cabbage one suddenly disappeared, engulfed by one of them. It is not often that one sees a Swallow take so large an insect. In fact, I cannot myself make out that butterflies are much preyed upon by birds; they are not sufficiently so, at any rate, for the fact to be forced upon one. It may be true that they fell victims when introduced into parks, but here the conditions were somewhat artificial. The bird that outnumbers all others in our parks—or, rather, monopolizes them—is the Sparrow, and Sparrows, especially London Sparrows, are “like French falconers—fly at anything.” The novelty, I think, too, must have had something to do with it. Butterflies are thought to be scarce in England, compared with continental countries. It is collectors, in my opinion, rather than the birds, who keep them down. Is there any other country than this where almost every boy has a box or two of worthless, dry, stuck things, or any where men continue so long to be boys, intellectually speaking? And then why speak of the Continent as if it were all one? In Italy, indeed—perhaps because the people are starved for the country to be a great power—bird-life is deplorably scarce; at least, I am told so. The Germans, however, are great bird-lovers, and where I was, at any rate, birds seemed to me much more abundant than here, both in species and individuals. So, too, did insects. People who think that the abundance of a preying species must mean the scarcity of species preyed upon seem to me to forget a few facts, as *e. g.* the state of South Africa when the Dutch first began to colonize it; the far greater numbers, formerly, of fish in the Thames when Otters were also much more plentiful; the teeming myriads of fish in the sea all eating each other, or being eaten by hosts of Seals and birds. The law, indeed, would seem to be, as one might expect, that an abundance of the eater goes hand in hand with a much greater abundance of the eaten, and this law holds good, as a rule, till civilized man steps upon the scene to upset, with greed, sport, and collecting, the balance of nature. The vast herds of Bison that once roamed over the North American

continent maintained their numbers in spite of the savage, though his powers of destruction were greater than those of an animal. So did the Grizzly Bears, but with the advent of the civilized savage all was quickly changed. And this universal destroyer, who, wherever he goes, is responsible for the disappearance of all animal and much of vegetable life, fixes his basilisk eye upon some very inferior imitation of himself, and cries, "Hold! enough!" This is a thing to make the gods laugh, perhaps; but, for myself, "my gorge rises at it."

October 10th.—Whilst watching some Starlings feeding in my meadow this morning the glasses suddenly revealed to me a Green Woodpecker quite near—indeed, almost amongst them. I watched this bird with the closest attention for perhaps a quarter of an hour, during the whole of which time it was on the ground searching for food. Its actions were almost identical with those of the Starlings themselves—that is to say, it continually thrust its beak into the grass—probably the soil also—and withdrew it. The Starlings shortly flew away, leaving the Woodpecker hunting by himself. In a minute or two he flew to a little grassy mound just at the corner of my orchard (which has about three trees with little or no fruit), and this he commenced to probe and search in the most thorough manner. He then flew into a small tree in the orchard-hedge, where I lost sight of him. Some five or ten minutes afterwards another flock of Starlings descended on the field, and immediately the Woodpecker reappeared, flying towards them from the hedge, and went right down amongst them. Unfortunately the crest of a little rise concealed most of the birds as they touched the ground, and amongst them the Woodpecker. But such a bird as a Woodpecker associating itself with Starlings, and searching the fields in company with them, seems to me very interesting. The Starlings, however, soon flew off again, leaving their distinguished companion as before. I now walked to the little hillock, and, stooping down, looked carefully at it, before laying a hand on the grass or disturbing it in any way. I soon observed two little holes amidst the long thin grass, and, following them down, found the earth, at the bottom of each, broken and pierced into to a slight depth, not more than about a quarter of an inch. But, carefully examining the broken earth, I could not discover any insect or

other creature, which, however, does not at all prove that the Woodpecker may not have done so.

November 3rd.—This morning, whilst being driven to the station, I came upon a Green Woodpecker pursued by a Hawk, and uttering loud cries. The Woodpecker seemed almost in the grasp of the Hawk—the two were certainly touching—but it managed to get clear, perhaps aided by the rattling of the trap, and the Hawk then flew off in another direction. This Hawk was of a light bluish or bluish-grey colour, and seemed hardly, if at all, larger than the Woodpecker. It must therefore, I think, have been a Merlin. I should be glad to think I had aided in the Woodpecker's escape, for it is distressing to think of such a bird being done to death in such a way.

November 11th.—This morning I watched Starlings feeding for some time on the lawn of a house at Richmond, where I was staying. Their *modus operandi* is to thrust the beak repeatedly and all about into the grass, at the same time opening the mandibles, and continuing to open and close them under the soil. They thus, as I suppose, search particularly the roots of the grass, though in many, if not in all, cases they must go deeper down into the soil underneath, since they wedge the bill in right up to the base. They must be searching about, and biting at anything they feel, to get "a taste of its quality." After some time I went out and examined the grass where these Starlings had been. It was quite covered with little round holes that their beaks had made. I probed many of these with a skewer, the depth of most being about what I should judge to be the length of a Starling's beak. Some, however, were much shallower, and here they seemed to have searched merely the immediate roots of the grass. I dug down with my fingers into many of these holes to see if they continued, as the burrows of worms, but this was not the case in any instance. The tactics therefore of Starlings and of Thrushes or Blackbirds in procuring food on the lawn are quite different. The latter strike at a worm when they see it lying with its head in the mouth of its burrow, and then, if successful, pull it out by hopping backwards, as everyone knows. The former search everywhere on chance, and make up for the want of assurance by the continuity of their efforts. Whilst watching the Starlings, here, I once or twice saw them pull up a

small worm, or part of one, and on other lawns I have seen them, through the glasses, get fat white or whitish-grey grubs, which had no doubt lain amongst the grass-roots. Such grubs, it is to be presumed, do much damage, so that the Starlings, by destroying them, must be a benefit to gardens. *En revanche*, they certainly eat fruit, but very crowded orchards co-exist, in the West of England, with immense flights of Starlings, and whilst fruit is only to be procured in the autumn, worms, slugs, insects and their larvæ, are destroyed throughout the year. Starlings are nothing like so plentiful in Suffolk, where I live, as they are in the neighbourhood of Gloucester and Cheltenham, and fruit, especially orchard fruit, is in the same relative proportion. To me it seems that the one is a corollary of the other, and, if so, why need fruit-growers be afraid, seeing that the very abundance of the Starlings proceeds from the abundance of their apples and pears? Certainly they lose something, but how ample is the margin of profit, and how must this be increased by the multitude of insects slain all the year round! But they cannot see it in this way. This is not all theory. I have watched numbers of Starlings in a great orchard, and for every one that was pecking a pear there seemed to me to be hundreds of thousands of pears untouched; whilst all about stood great baskets crammed with them to overflowing. The birds have simply not time, and are not sufficiently gathered in any one spot to do much damage in proportion to the huge amount of fruit, and what they do do I believe they pay for, for they feed all day long over the grass-fields. Again, it is asserted that the roosting of Starlings in such great numbers destroys the woods. I do not know what the evidence of this is. In the roosting-place that I am best acquainted with there is certainly a pungent smell, but everything seems growing in the same way as elsewhere. Moreover, however large the numbers, the actual space required for their sleeping accommodation is very small. The fact is that the mere sight of birds or other animals congregated together in great numbers has an irritating effect on very many people. They are moved not so much to interest and observation as to "slaughterous thoughts." "They want thinning," "We could do with a few less of them," &c. In fact, the deep-seated instinct of killing—which is all that "sport" really is—is aroused by the sight of so

much that might be killed, and to this is added, where actual predation is witnessed, a feeling of hatred, and desire for revenge. There can be no impartiality or discrimination in such an atmosphere, no balancing of the arguments. The defence is unpopular, and a cold ear is turned to any witness for it.

November 22nd.—Back at Icklingham. A Rabbit to-day ran suddenly out of a bush, and almost over a Moorhen that was feeding near it, for the bush edged her pond. I do not know whether this was accidental on the part of the Rabbit, or a demonstration, as in the case of the Stock-Dove. The Moorhen was at first quite alarmed, but recovered herself, and could soon browse calmly again.

November 24th.—This morning I noticed two male Pheasants engaged in hostilities, or, rather, in threatening them. They crouched opposite each other, the feathers of their breasts just touching the grass, and about a foot apart. In this position each would dart the beak forward, and, as it almost touched the opposing bird's, retire it again. The lunge, however, was not made fiercely, but in a timid, half-hearted manner, as though either bird would be glad of a good excuse for withdrawing from the business. This seemed to be particularly the case with one of them, who at every little pause rose and began to walk away with a half-dignified, half-unconscious appearance. But, upon this, the other would always make a run at him, when he would instantly front round and crouch into the same position, which his opponent likewise assuming, the same proceedings recommenced. As the wish of the one bird to retire became more marked, the rushes of the other grew fiercer, but a very little facing about was sufficient to quell this martial ardour. "Resist and I retire; retire and I pursue," seemed to be the motto. It was a Nym and Pistol affair, and a passing cart put an end to it. This is strange fighting. I would all men were such warriors. When these Pheasants were thus crouched before one another, the tail of one of them was raised almost straight up in the air, and expanded. This, however, I soon concluded to be the wind. Perhaps I was mistaken, but the other one, who faced the wind, had his tail straight out along the ground.

December 8th.—I spent a cold half-hour to-day in watching Rooks feeding in a meadow. Several found something which

looked, as they held it in the beak, like an acorn or oak-apple. This they placed on the ground, and, without holding it with the feet, hammered at it powerfully with the beak. To me it seemed that at each blow the beak was thrust into the earth, that there was spade as well as pickaxe action—at least with one bird that I watched, as well as I could, through the glasses. I could not make out that this Rook broke up and ate the object, whatever it was, and as he shortly walked away without it, it struck me that he might have buried it, as a Squirrel does his store. A second Rook, however, broke and ate, as well as I could see, a portion of what he had, and a day or two before I had seen another one, at the same place, do the same. A third, having pickaxed the ground a little, had all at once something—I think, an acorn—in his bill, which he swallowed whole. Walking to the spot, I found the rind of two acorns, and, as both of these could not have belonged to the one he swallowed, it is probable that neither did. Now, as the Rook swallowed the acorn whole, the blows with the beak were not given to break it, one would think. It looks as if it had dug up and swallowed a previously buried one. Twenty-five paces away there was an oak-tree, and under it I found quantities of acorns with pieces hacked out of them, and having the appearance of having lain some time after they had been thus treated. Probably the Rooks, having found an abundance, had eaten daintily. I think they bury acorns, but could not see to be sure of it.

December 9th.—Leave home at 7.15 a.m.

7.20.—First twitter of a small bird.

7.35.—First Rook seen flying, laboriously and alone. There is twittering of small birds in the fir-trees and copses, but none about yet.

7.40.—Rooks flying, and a Blackbird goes up from the road, with its expostulation-note. Small birds now begin to fly from tree to tree, along a row of firs—Chaffinches, Greenfinches, Tits, &c. Wretched poor notings these for a naturalist, or any man, to make, but I do not know what he can find better in a country like this at this time of year, and of the morning. England is a wretched place except for the very rich and the very patriotic.

7.47.—Rooks now flying very high, in opposite direction to West Stow, where they roost. A Blackbird—male, I think—

flies from the ground in silence, though put up by me. Another one—a cock this time for certain—does the same, with a very modified note, querulous and chattering—nothing like the well-known one, the alarm-note, as it is called.

About 8, great bands of small birds are in full activity. They are pillaging a straw-stack, to the sides of which they cling, and, on being disturbed, fly from it, in a cloud, to some fir-trees near, and then backwards and forwards at intervals. Their wings, all vibrating together, make a powerful whirring noise, which is at its maximum as they rise together in a cloud, lessening as they spread out, ceasing suddenly as they whirl into a tree or on to the ground again.

A Pheasant walking and feeding quietly by the side of the stack. Partridges scattered about the stubble-field, and beginning now to feed over it. Two Rooks, perched side by side on a tree, are like bits of black night staying after the rest has fled. The small birds making the flocks are Chaffinches, cock and hen (the latter largely predominating, but on a thorn-bush I see two cocks and six hens) Greenfinches (mostly hens, I suppose, yet yesterday there was a great show of green as they rose) and Yellowhammers—but these in twos and threes.

Two little Golden-crested Wrens are flying from fir to fir, and pecking about the bark, as if for insects. Yet what can they get on the 9th of December, and a cold frosty morning? From the little stream comes a peculiar trumpety note, made, I believe, by a Mallard, for, looking in the direction it came from, I saw a bird on the water, and, walking there a little afterwards, put a female Mallard up. This great flock of small Passeres is now perched all over an oak-tree, which looks in leaf and life again—a feathered foliage. How *bizarre* is colour, in the dead of winter, here! All that I can see now are Chaffinches and Greenfinches, and both sexes are well represented. This is apparent, for the tree is full of colour, and it is only the cocks that make it. Two—one of each kind—are sitting side by side, close—almost pressed—together, making a pretty effect, like a splotch on a painter's palette, but in feather-work—very much softer.

Whilst jotting this down a minute spider falls on my notebook. This answers the question as to the Golden-crested Wrens, “What can they get?”—to a certain extent, at least. Many spiders

seem to hibernate in the chinks of, and especially underneath, bark in winter, some of them in a sort of webby cocoon which they spin. Numbers of small pupæ, too, choose—or have in their pre-existence chosen—the same situations, and especially that extremely common one, about here, of the Cinnabar Moth. Its luridly-coloured caterpillar, banded with deep black and yellow, is all over the common fleabane, that grows something like a scanty crop over much of the sandy soil hereabouts, and when about to pupate, as I have noticed with interest, it ascends the trunk of the Scotch fir, and undergoes the change in one of the numerous chinks of its flaky bark. I have seen numbers of them thus ascending and entering, but I do not know from how great a distance they come to the trees. Probably it is only from quite near, for the majority, to get to them, would have to travel farther than can be supposed possible, and, moreover, fir-trees in these parts date only from some fifty years ago, I believe, if so far back as that. Doubtless it is mere chance, but when one sees them crawling towards the trees, and ascending as soon as they get to them, it looks as though they were acting under some special impulse. These caterpillars are, I believe, nauseous to birds. I have thrown them to fowls, who appeared not to see them. This, I suppose, is an example of warning coloration.

December 10th.—Of all birds, Moorhens seem to me to utter the most extraordinary sounds. They have purrs, mews, explosions, and so forth, all of them having a certain brazen resonancy which suggests more a metal instrument than anything made of flesh and blood. Transliteration is wholly impossible, yet what say you to “chook-oo, chook-oo,” followed by a long-drawn guttural note, something like—if it could be like anything—“ger-oorr,” or to a sudden “currew-oo,” with an indescribable resonant, burring trill in it?

“Que pensez-vous de ça mon chien?
Que pensez-vous de ça mon chat?”

December 11th (cold frosty morning, but bright and fine. Light snow on the ground).—At 8.50 a.m. I was by the streamlet, at that part of it which I call the creek, behind and well concealed by the willow, as yesterday, but in a more comfortable position. As I got there I heard quite close, amongst the sedge, a peculiar, almost squeaking, note, quite different to that of the Moorhen.

It had a high needley sound, and was rapidly repeated, each individual note being short and of one syllable. Almost immediately two Dabchicks swam out into the stream, and one of them uttered a note, not, indeed, the same as I had just heard, but having the same character of sound. It was a sort of weak chirruppy chatter, rather than a squeak; but shortly afterwards I hear the same little needley squeaking, and now again a "wee-ee-ee-ee-ee-ee-ee" very rapidly repeated, and with a thin vibration. It is a curious note, different from that of any other bird I know of. If a tittering young lady were to be changed—or modified—into a Grasshopper, but beg, as a favour, to be allowed still to titter—as a Grasshopper—this would be it. It is also like—indeed, very like—the hinney of a Horse, heard in the farthest distance at which the ear can still catch it—immense improvements both on the imagined original. The Dabchick's note is given, in a well-known handbook, as "whit, whit"; so, as this is not a whit like what it appears to me to be, I shall continue to jot it down when I hear it, more particularly when I happen to see the bird at the same time. At nine it commences to snow.

In the woods at Jerry's Hill, where the Rooks roost, at 3 p.m. The actual spot is a square plantation of gloomy firs, but skirting this is another one of young oaks and beeches, from which, on my approach, Wood-Pigeons in great numbers fly up. After I have been for some time silently seated under a tree of the dividing row—between the two plantations, that is—they return "in numbers numberless," almost rivalling the Rooks themselves. They cut the air at a great rate, making a whistling, whirring noise, and descend impetuously, into the oaks especially, which are more numerous than the beeches. They like to be near one another, so that, though their numbers are so great, and being continually reinforced, they seem, rather, gathered into a few trees that are close together than scattered amongst them generally; no doubt they are this, too, though more thinly. I cannot see all of the plantation equally well, but it seems as if some trees are favourites, into which all the birds that can, descend.

In about twenty minutes, during all which time the plantation has been filling, a number of the Pigeons fly out from the most populous trees into others farther off, as if the ones they were sitting in had become overcrowded. There is a constantly

recurring clatter and swish of wings, and then, in another ten minutes, the great bulk of the birds (as it seems) rise suddenly, with such a clapping as Garrick or Mrs. Siddons might have dreamed of, fly rapidly about, descend into the trees again, leave them once more, and depart—numbers of them, at least—in impetuous, arrowy flight. In a little while, though the plantation seems still fairly peopled, the greater part of them, as I think, have gone. Towards four, however, it becomes so cold that I have to move, and *all* the Pigeons fly out of all the trees—a revelation as to their real numbers, quite a wonderful thing to see. Some of the trees, as the birds leave them—just in the moment when they are going, but still there—are neither oaks, nor beeches (nor ashes, elms, poplars, firs, sycamores, nor anything, for the matter of that) but *pigeon-trees*—that and nothing else. A wonderful sight! A wonderful thing! Something in England, after all!

December 12th. (Hard weather. Slight snow on the ground.)—I was up before four this morning, and got to the woods where the Rooks roost at 6.20, an hour almost before they even began to fly out. Whilst cycling down I saw a splendid meteorite, or leonide, as they call them now. I did not merely happen to see it, as it was falling, but my attention was attracted by a sudden lighting up of the atmosphere, causing me to look about, when I saw a great luminous green globe, in appearance as large as a football, descending through the sky to my right. It was of a light luminous green, brilliant, but softly brilliant—very distinctive. I can think of no colour like it—earth is not like unto heaven.

The Pheasant's habit of crouching favours, I think, the view that the brilliant colouring of the male bird has been acquired gradually. See this one now, in this little scanty plantation of stunted oak and hazel-bush, thus trying to elude observation. It is as though a torch should do the same. The bright burnished surface of iridescent hues, the intense red round the eye, are almost as conspicuous amidst the cold wintry surroundings—the leafless trees with the deep glow of sunset beyond, against which they stand like ink. But the hen Pheasant, from the plain stuff of whose plumage the cock's gorgeous tapestry has been evolved, would be well-nigh invisible were she now in his place. However, stillness is, in itself, less conspicuous than motion. After

all, there is nothing like not being seen, and foliage, as well as mere luck, may secure this advantage to the most resplendent. One cannot see all ways at once. But I believe that your thorough-going advocate of protective coloration would look at a red lion, stepped off a public-house, and cry out, "How assimilative!"

There is one thing that my attention has been drawn to in regard to the male Pheasant. It has upon the posterior portion of the back a large patch of much less brilliant colouring than the rest of it, or than the throat, neck, head, &c. When the bird is in retreat—and it often retreats stealthily for some while before crouching—this surface is turned towards one, and I have thought, sometimes, that here was a sort of dull-coloured shield to the bird's brightness—it does, I think, act as such to some extent. I look upon it, however, as that part of the body which is least exposed, during courtship, to the observation of the hen, and which has therefore remained comparatively dull.

A Robin is searching the newly flung-up mould of a Mole-heap, and seems to find something, which he flies away with. Looking closely at some similar mould afterwards, I can find nothing whatever that a bird might eat. It is difficult to think what birds do find on days like this. Squirrels have their hoards, yet who would think to see them scampering over the snow in the depth of winter? What make they out of their warm hibernacula, where—happy beings—they may sleep away not nights only, but weeks, months, a whole season at a time? That is what they are supposed to do—at least, I understand so. True they lay up stores, and on a warm sunny day one can understand them coming out to go to them. But why on such a day as this? Has the weather really nothing to do with it, but do they wake up, at certain intervals, hungry? But why then should they hibernate at all? There must be food enough for them surely. Fir-cones are quite a staple of their diet, and these are on the trees through the winter. Then, again, they eat bark, if all tales be true, though the bark made about it is worse, I suspect, than their bite. Hibernation seems a splendid remedy for a want of food, and that I have looked on as the *rationale* of it. But surely, if a Hare or Rabbit can get through the winter without hibernating, a Squirrel ought to be able to.

(To be continued.)

BIONOMICAL NOTES ON SOME BORNEAN MANTIDÆ.

By R. SHELFORD, M.A., C.M.Z.S., Curator of the Sarawak Museum.

DURING a five years' residence in Sarawak, Borneo, I have kept in captivity, and under close observation, many species and specimens of *Mantidæ*, and have from time to time jotted down rough notes on their habits, their food, methods of feeding, life-history, &c. The following account is a brief *résumé* of these notes, and, though containing no very important or new facts, may perhaps be of some interest to those readers of 'The Zoologist' who have never had the good fortune to observe these curious insects alive for themselves.

Species of the genus *Hierodula* and *Tenodera superstitionis* are met with more frequently than any others in Borneo, and, as they are strongly attracted by light and frequently fly into houses at night when the lamps are lit, I have had plenty of opportunities of observing their habits in captivity, and of checking my observations.

A Mantis such as one of these, when first captured, displays considerable ferocity, grasping with its raptorial legs the fingers of its captor with great force, at the same time trying to bite, but after a few days many become comparatively tame, and some of my captives would not only take food from my fingers, but would devour it whilst resting on my hand. It is most interesting to watch a Mantis, e. g. *Hierodula dyaka* (a bright green species), attack a large butterfly, such as an *Ornithoptera* or *Amathusiine* when introduced into its cage; the movements of the butterfly are watched closely for some time, the Mantis turning its head from side to side in what appears to be a very intelligent manner; the fore part of the body (the prothorax) is raised, the raptorial front legs are drawn up close against the side of the body, and their yellow inner surfaces turned outwards; the abdomen

is sometimes so strongly dilated as to show the black inter-segmental membranes. The butterfly is seized with a sudden snatch, and the Mantis nearly always commences operations by biting through the costal nervures of the fore wings near their origin ; if, however, the prey has not been seized in a position favourable for this method of attack, the Mantis bites into the chest so as to sever the wing-muscles. A large Ornithoptera, when first seized, will dash its attacker with great violence against the sides of the cage in its mad struggles for freedom,



FIG. 1.—*Rhombodera basalis*, De Haan ; cleaning its left mid-leg after a meal.

but I have never yet seen a Mantis relax its hold ; on the contrary, it will with much persistence literally burrow its way into the thorax of the butterfly until the flutterings become weaker and weaker, as one by one the wing-muscles are severed. If the butterfly is one of the weak *Satyrinae* or a small Nymphaline, the Mantis commences its meal on any part that comes handy—the head, the abdomen, or perhaps the legs ; but strong-flying species are always attacked, so far as my observations go, in the way described, and as often as I have witnessed it, I have been irre-

sistibly reminded of a bull-dog trying to pull down a bull. If the Mantis is hungry it will devour the whole butterfly, leaving only the wings, and perhaps the distal part of the legs. After a meal a Mantis will proceed to clean itself; the teeth of the fore femora and tibiae are picked over by the mandibles, then the fore legs are repeatedly rubbed over the eyes and top of the head, much in the same way as the House-fly, after rubbing its fore tarsi together, passes its legs over its head; finally the tarsi of the middle pair of legs are cleaned in the following way: the prothorax is turned at an angle to the rest of the body, and one of the front legs hooks up one of the middle legs and carries it to the mouth; it is held in position there whilst being cleaned by the mandibles, and then released (Fig. 1). A great many *Mantidæ* have, as is well known, the inner sides of the fore legs coloured in a conspicuous manner, and these conspicuous markings are displayed whenever the insect is meditating an attack on its prey. The green *Hierodula*, however, have the inner side of the fore legs merely a pale yellow, which is certainly not very conspicuous; still, as already stated, a *Hierodula*, when a butterfly is introduced into its cage, always throws itself into an attitude that displays these yellow surfaces to best advantage, not, so far as I can see, to terrorize or fascinate its prey, but merely because a sudden and powerful snatch is more readily made from this position than from any other. I am inclined to believe that in such an unconscious "display" * as this we may see the beginnings of those remarkable attitudes assumed by such floral simulations as the Empusides, which attitudes might well be termed "purposeful displays." † Of course, many species, e. g. *Tenodera superstitionis*, do not attitudinize in any way whatever when excited, and that I am inclined to regard as the primitive habit; but these species have not got the fore legs coloured on the inside even as conspicuously as the *Hierodula*. The dead-leaf-like form (*Deroplatys desiccata*) has the inner side

* By the term "display" I mean the sudden exhibition of brightly coloured or conspicuously marked parts which are concealed during rest.

† I find that I am anticipated in this supposition, for Dr. Sharp, in an interesting paper on *Idolum diabroticum* (Proc. Cambridge Phil. Soc. vol. x. pt. iii.), supposes (p. 180) that "in the past the function of catching in a particular manner has preceded the modifications of structure for doing so."

of the fore femora red-brown, blotched with black and pearly white in a small oval patch on the front border. In another dead-leaf-like species (*D. shelfordi*) the inside of the fore coxa is red throughout its proximal two-thirds, pale bluish in the distal third, the femur has a heavy black blotch about its middle. *D. desiccata*, preparatory to seizing its prey, invariably behaved like the *Hierodula*, i. e. the front of the body was raised, and the fore legs drawn up close against the body, and slightly rotated outwards so as to display their inner surfaces. The black and white blotches show up very conspicuously against the red-brown of the rest of the body. The under sides of the elytra in this species are marked on their outer halves with conspicuous white and madder blotches, but these markings are never displayed. *D. shelfordi* used to adopt a very different attitude when prey approached ; the front of the body would be raised and the fore legs stretched out widely at right angles on either side of the body ; sometimes the elytra would be raised up, and the wings spread out fan-wise behind them,* the Mantis all the time this attitude was maintained swaying slightly from side to side. The under sides of the elytra in this species are bluish grey, with four large fuscous patches, the wings on the costal border are pale yellowish, but otherwise are coal-black mottled with innumerable fine pinkish-white lines.

A still more remarkable appearance is presented by *Hestiasula sarawaca*. This little Mantis, when at rest, is very cryptically coloured with brown and grey ; its fore femora are produced into large flat expansions, which causes them to be disc-like in shape ; they are held close together in front of the body, when the insect appears to be of roughly the same diameter throughout, and looks like a piece of wood or excrescence of bark. On the approach of prey, or when irritated, a wonderful transformation takes place ; the prothorax is raised, and the fore legs are spread widely out on either side of it ; the elytra, wings, and abdomen are also elevated, the wings spread out fan-wise ; the front coxae on their inner aspect are a deep crimson ; the plate-like femora are bright yellow, with a black sickle-shaped marking

* A large species of *Gryllacris*, common in Indo-Malaya, when irritated, always raises the elytra and wings fan-wise over the back. The European *Mantis religiosa* "displays" in the same way.

extending along the posterior and proximal borders, and with two small black spots on the anterior border; the under surface of the prothorax is coal-black, and the wings are black, mottled nearly all over with fine chrome-yellow streaks and dashes. During this "display" the antennæ are agitated so rapidly that only an indistinct blur is seen in their place; the fore tibæ snap down on their femora with a clock-like regularity, a continuous rustling sound maintained by the wings, and the insect sways from side to side, now bolt upright, then right over on one side, then with a swing right over on the other side.



FIG. 2.—*Hestiasula sarawaca*, Westw.; beginning to "display": front of body raised, fore-legs opening out.

A green and white *Theopropus* (*T. elegans*, Westw.) "displays" in much the same manner as *Deroplatys shelfordi*, but neither the inner side of the fore limbs nor the wings are conspicuously coloured.

What is the meaning of these "displays"? It should in the first place be remembered that they can be induced by irritating the Mantid, as well as by the presence of prey. None of the species described above look in the least degree flower-like when

"displaying," and it is absurd to suppose that butterflies or other insects can be fascinated or attracted by conspicuous markings or weird postures. I can only conclude that these Mantid "displays" are warning attitudes comparable with the warning "displays" of many lepidopterous larvae (cf. the eye-spots of many species of *Chærocampa* amongst the hawk-moths, the black patch in larvae of *Dasychira* spp. amongst the *Lymantriidae*, the everted red processes of *Papilio* larvae, &c.).

Further, I believe that these "displays" have originated from the simple posture of attack or defence into which such a species as *Hierodula dyaka* throws itself when stimulated by the presence of its prey, or by an enemy's attack. As already stated, that posture—in which the fore legs are drawn up close against the sides of the body, and slightly rotated outwards so as to show their yellow inner aspects—is adopted because it is the most convenient for making a sudden snatch at a moving insect, and it has no other purpose. We may imagine that these unconsciously "displayed" parts may become conspicuously marked as in *Deroplatys desiccata*, that still later these parts become more conspicuous, and the attitude better adapted for showing them off, as in *D. shelfordi* and *Hestiasula sarawaca*; finally, that the parts become flower-like, and the "display" a more or less permanent condition in the Mantis's life, as in the Empusides.* In other words, the floral simulation of the Empusides is an outcome of a warning "display," which again originated from a simple posture of defence or attack.† These warning "displays," having then been evolved from a simple posture of attack, it is only natural that they should be made under the stimulus of any excitement, such as the presence of prey or an enemy. A Mantis is naturally a ferocious insect, and its first instinct when stimulated is to seize and destroy the exciting cause; for example, none of the dead-leaf-like species feign death when

* The Empusides are described by many observers as swaying gently when at rest, apparently to imitate the swaying of a flower in a gentle breeze. This swaying movement is, as shown above, characteristic of the warning display of *Hestiasula sarawaca*.

† Dr. Sharp (*l. c. p. 177*) thinks that the position in which the front legs of *Idolom diabolicum* is held is very unusual amongst the Mantidae, but I hope that I have shown that this is not the case.

irritated, as Phasmids and many other cryptically formed insects do, but instantly prepare to attack their assailant.

A very curious and interesting species is *Metallyticus semieneus*; it is a metallic-green and blue-black, is much flattened dorso-ventrally, and has many other uncommon characteristics; unlike all other *Mantidæ* with which I am acquainted, it runs with great swiftness, and with the gait of a cockroach, i.e. literally *ventre à terre*, the body not being raised well off the ground as is the case with its relations. The species is found generally on the bark of trees, but often underneath the bark, and it preys on cockroaches. I endeavoured, with ill-success, to keep specimens of this Mantis in captivity before I discovered that its natural prey was cockroaches; butterflies, flies, termites were never touched, but if a cockroach was introduced into a cage containing this Mantid, it was either pounced on at once or else captured after a long and exciting chase all over the cage.

Theopropus elegans has the curious habit of resting on the femoro-coxal joints of all the legs; it progresses with a curious swaying top-heavy motion, varied with an occasional scrambling leap; the large fore legs of this species appear as if too heavy for it. The hind wings are a beautiful iridescent white, very finely speckled with purple.

Hymenopus bicornis, one of the Harpagides, is a floral simulator throughout the whole of its life-history, with the exception of the first stage. I shall have some remarks to make on the young of this species later on. The adult is a cream-colour, with some brown stains on the elytra; the mid and hind femora are furnished with plate-like expansions, the prothorax is only slightly enlarged, and the fore legs not at all. In the cabinet the insect does not look very flower-like, but when seen hanging perhaps upside down on a bush with the two pairs of ambulatory legs spread wide out, it can readily be mistaken for some curious orchid-like bloom. It makes no "display" on the approach of prey, but quietly waits till that comes within striking distance, an exceptional habit induced doubtless by its floral simulation.

Some *Mantidæ* are much afflicted with a parasitic worm, a long brown thread-like Gordian; the two species that I have found to be most affected are *Hierodula dyaka* and *Rhombodera basalis*; it is, indeed, very seldom that one of the latter is found

without its parasite, which lodges in the fat body above the intestine. Professor Camerano has described this Gordian worm as *Chordodes shipleyi* (*Atti della R. Accad. delle Scienze di Torino*, vol. xxxiv. p. 3, 1899).

One of my objects in keeping *Mantidæ* alive was to test their likes or dislikes for particular insects, and their appreciation of the warning colours displayed by distasteful insects,* and with this object in view my captives have always been furnished with a most mixed diet. I may say at once that I have found little evidence that *Mantidæ* appreciate warning colours, and still less evidence that they prefer one sort of butterfly to another, or particularly dislike such acknowledged distasteful butterflies as the members of the subfamily *Danainæ*. The black and white day-flying moths of the *Deileméra* (= *Nyctemera*) are, however, invariably refused, and left strictly alone, even when introduced together with cryptical moths and butterflies that are presumably palatable. I have never yet seen a Mantis attack one of these distasteful species, nor have I ever found their half-eaten remains in a Mantis's cage. In this connection it is interesting to note that the large and common Spider (*Nephila maculata*) manifests the same dislike for *Deileméra*. I spent several hours one morning introducing insects of the most varied orders into a web of this Spider. All butterflies and many beetles were devoured greedily, but *Deileméra coleta*, and another species of the same genus, the little Bees of the genus *Trigona*, and the Reduviid bug (*Velinus nigrigenu*) were always cut free and flicked out of the web at once. I have several records of *Mantidæ* seizing and partially devouring such *Danainæ* as *Parantica eryx*, *Trepsichrois mulciber*, *Tronga crameri*, and then relinquishing their hold as if their meal was too nauseous to be proceeded with; but these rejected insects have always been dead when relinquished, so that their warning colours were of no value to them in securing them immunity from attack. My records of *Mantidæ* seizing and completely devouring *Danainæ* are, on the other hand, much more numerous, and I have not even had reason to suspect that a prolonged diet of *Danaine* butterflies

* See *Trans. Ent. Soc. London*, 1902, pt. iii. p. 297 *et seq.* for a series of experiments on Mantid likes and dislikes, by G. A. K. Marshall ("Bionomics of South African Insects").

has been prejudicial to the health of any Mantis, though Mr. Marshall (*l. c. p. 309*) believes that in some cases a prolonged *Acrea* diet was the cause of the death of some of his captive *Mantidæ*. It is quite possible that the gaudy *Acreas* are more nauseous than the Oriental *Danainæ*; *Limnas chrysippus* and other species of the same genus are found so rarely in this part of Borneo that I have not been able to experiment with them, which is a matter for some regret, as these are the most gaudy members of the *Danainæ*. I have also tried the experiment of putting several species of butterflies—palatable and distasteful species—into a Mantid's cage all at the same time, and watching to see if any selection was exercised; but, with the aforesaid exception of *Deilemeræ*, the Mantid always appeared perfectly indifferent in its choice, a *Danaine* being seized as eagerly as any other species if it happened to get within striking distance. A newly captured Mantis will seize and devour any fluttering insect that may be introduced into its cage, purely, I believe, from sheer ferocity, and I think that in all experiments of this nature this fact ought to be taken into account; for example, I have seen a newly-imprisoned Mantis pounce on a male *Trepsichrois mulciber*, and, after nibbling at its head and legs, suddenly nip off the yellow scent-glands which were protruding from the end of the abdomen of the butterfly; the butterfly was then released, recaptured, released again, recaptured again, and finally devoured. Two very strong-smelling Coreid bugs, *Mictis longicornis*, were introduced into a cage containing a species of *Hierodula*, and much to my surprise were completely devoured. It is recorded in Mr. Marshall's paper, that two bugs, *Cyclopelta* sp. and *Physomerus* sp., were never eaten, though often killed, by an Indian Mantis, *Hierodula bipapilla*; on the other hand, that the Coreid *Anoplocnemis curvipes** was devoured by Baboons.† On the whole,

* The Coreidæ are rather a puzzle to supporters of the mimicry theory; they all have a very strong and disagreeable odour, just as the brilliantly coloured Pentatomidae have (*cf. Catacanthus, Chrysocoris, &c.*), and yet all are cryptically coloured, and many have the leaf-like expansions on legs and prothorax which we are accustomed to associate with palatable cryptically coloured insects, such as Phasmids and some beetles.

† Another species, *Holopterna alata*, in spite of its offensive smell, is eaten in the Transvaal by a Lizard, Fowls, and Meérkat.—ED. (*Cf. 'Zool.'* 1902, p. 898.)

allowing for the assumed greater distastefulness of *Acroneuria*, my results agree well with Mr. Marshall's: we have little or no evidence that *Mantidae* appreciate warning colours; a distasteful insect when seized is either completely devoured or else half eaten and so killed, and neither here nor in Africa do *Mantidae* show that aversion to distasteful forms that one might expect, nor do they exercise much, if any, selection in the capture of their prey from amongst a number of butterflies.

I have been able to recognize two types of egg-cases amongst the *Mantidae* of Borneo: (1) that made by the members of the tribe *Mantidae*; (2) that made by the *Harpagides*. The former is a large rounded white structure adhering to vertical grass-blades or plant-stems. It consists of two distinct parts—an outer thick covering of spongy texture, being a dried froth, and a dense central mass of eggs disposed symmetrically in closely apposed follicles; the outside is streaked slightly, showing that the outer covering was laid on in successive layers of froth. Such an egg-case is figured in almost every entomological text-book. I believe that the use of the spongy outer covering is to prevent the attacks of parasitic Hymenoptera. An Ichneumon fly would require a very long ovipositor to reach the central mass of eggs; yet such are to be found frequently in Borneo, and on one occasion I disturbed a small Braconid (? *Iphiaulax* sp.) that was resting on a Mantid's egg-case. I reared young Mantid larvae from these eggs; so either the Braconid had not commenced operations when disturbed, or else had no nefarious designs on the nest at all. Very frequently an egg-case is tenanted by ants, who scoop out much of the outer covering, leaving a mere shell with the central egg-mass attached by a few strands only to the outermost wall; the ants never seem to interfere with the eggs. The *Harpagides* make a long narrow egg-case, generally cream-coloured, and adhering to more or less horizontal stems and twigs. The eggs are disposed symmetrically along a central axis, and covered with a very thin layer of froth, smooth and shining on the outside. *Theopropus elegans* and *Hymenopus bicornis* are devoted mothers; a captive specimen of the former used always to rest astride her egg-case, and twice I have taken the latter close beside her eggs.

Hestiasula sarawaca makes a nest more or less intermediate

between the Mantid and Harpagid types, i. e. it is a long narrow structure adhering to a horizontal twig, but it is covered with an irregularly shaped mass of dried froth, not smooth on the outside, sea-green in colour. The young of Harpagides walk straight out of the ootheca on to the twig to which it adheres; but the young of the Mantides lower themselves from the suspended nest by silken threads to the ground, or to a leaf, and only then begin to rid themselves of the embryonic envelope in which they are encased (see a figure in 'Cambridge Natural History—Insects,' Part I. p. 247).*

The young of *Hierodula* are green or yellowish, and quite recognizable as the offspring of their parents. But this is not often the case, e. g. the young of *Tenodera superstitionis*, a brownish-green species, are coal-black, except on the crown of the head, dorsal surfaces of the meso- and metathorax, and the legs, which are salmon-pink; the lateral borders of the prothorax and abdomen are pearly-white; the eyes are pearly-white, with a black streak running down the centre; the four basal joints of the antennæ each bear four long setæ and look feather-like. These little creatures are very active, and look remarkably like ants.

The young of *Metallyticus semiæneus* are chequered on the meso- and meta-notum and on the dorsal surface of the abdomen with white, and the legs are red. Unlike all the other larvæ and pupæ of *Mantidæ* that I am acquainted with, this does not carry the abdomen turned up over the back of the thorax. The newly-hatched young of *Hymenopus bicornis*, when they just emerge from the ootheca, are sealing-wax red, with black head and legs; they then bear a remarkably close resemblance to the young larvæ of a Reduviid Bug, *Eulyes amana*, even to their method of moving about with abdomen turned up. In this stage the plate-like expansions of the legs are not developed. After the first moult the larvæ become pink or cream-colour, and the femoral expansions make their appearance; from this stage on the insect remains flower-like. The colour of the larva depends a good deal, if not entirely, on the colour of the flowers that it frequents. Recently I had brought to my notice a specimen that

* I have not come across any pre-larval stage such as has been described for the European *Mantis religiosa*.

had been found on a yellow flower with crimson stamens; the larva was yellow, with crimson lines on the abdomen and crimson mid- and hind-axæ. As far as my observations go, this species cannot change its colour in adaptation to its surroundings without moulting. A pink specimen found on a shrub with pink flowers (? *Melastoma* sp.) was kept under a bell-jar standing on a sheet of white paper. After a few days the larva moulted, and was then pure white. A nymph of *Deroplatys desiccata*, on the other hand, that was kept for some days in a box lined with white paper, became noticeably paler in colour.

A full and accurate account of the habits of a pupal *Hymenopus bicornis* may be found in a paper on the Insects of the Skeat Expedition, by Mr. Nelson Annandale (P. Z. S., pt. iv. 1900, pp. 839-848). The same paper contains notes on other Malayan Mantidæ.

Description of a New Species of Mantidæ referred to in the above paper by W. F. Kirby, F.L.S., &c.

DEROPLATYS SHELFORDI, sp. n.

Long. corp. 60 millim.; long. pron. 30 millim.; lat. 26 millim.

Female.—Dead-leaf brown; pronotum of a long bell-shape, regularly curved and expanded backwards to its greatest breadth, the hind border curving backwards and inwards to the extremity; lateral borders denticulated on the basal half. Tegmina with no distinct markings except a narrow yellowish discal stripe; wings banded with blackish, and produced into long processes at the extremity, as in *D. truncata*, Guér. Spines of the front femora and tibiæ more or less tipped with black; front femora with a black band towards the extremity on the inner side, intersected by two or three short yellowish stripes; front coxae with six or eight short straight spines.

Hab. Borneo; Sarawak (Shelford).

Apparently intermediate between *D. truncata*, Guér., and *D. horrifida*, Westw., resembling the former in shape, and the latter in markings.

BIRD NOTES IN SARK, 1903.

BY E. F. M. ELMS.

(Concluded from p. 268.)

RED-BACKED SHRIKE (*Lanius collaris*).—Saw several individuals. They were mostly very clamorous, and were constantly uttering their “chirruping song, not unlike the attempted singing of a Sparrow in sound.”

SWALLOW (*Hirundo rustica*).—A good many about hawking for insects either inland or near the sea. Saw no nests, though several open sheds were inspected. They probably breed in suitable places among the sea-cliffs.

HOUSE-MARTIN (*Chelidon urbica*).—Less common than last. Nowhere were there any of their familiar plastered nests under the eaves of the houses. Perhaps they, too, breed among the cliffs.

GREENFINCH (*Ligurinus chloris*).—Not an abundant species, but occurring in localities suitable to it.

HOUSE-SPARROW (*Passer domesticus*).—As ubiquitous in Sark as elsewhere, and nesting in trees.

CHAFFINCH (*Fringilla cælebs*).—The remarks made on Greenfinch apply here.

LINNET (*Linota cannabina*).—Considering the vast quantities of gorse, one might have expected to find Linnets in hosts; not so, however, but they were fairly numerous, especially on the western coast, and nesting freely in the gorse.

CORN-BUNTING (*Emberiza miliaria*).—One or two noted on cultivated land, but by no means common.

YELLOW BUNTING (*E. citrinella*).—Saw only one of these handsome birds during the whole of our stay.

CIRL-BUNTING (*E. cirlus*).—Same as Yellow Bunting.

STARLING (*Sturnus vulgaris*).—Quite an uncommon species, comparatively speaking. Heard young ones crying from a hole in the cliffs, to which the parent flew with food in its beak.

CHOUGH (*Pyrrhocorax graculus*).—Did not see one personally, but I hear it still hangs on, but in ever-decreasing numbers.

MAGPIE (*Pica rustica*).—One of the commonest of the Corvine

family, all keeping inland, and seemingly not so shy as in England, feeding out in the open fields, or at the side of the road.

CARRION-CROW (*Corvus corone*).—Perhaps as common as the Magpie. Saw several every day, generally in the locality of the sea. The Crows and Sea-birds are sworn enemies, and a fearful uproar ensued one day as one of these black rascals alighted on one of Les Autelets (comprising four isolated rocks), the inaccessible home of Guillemots, Gulls, &c. On another occasion saw hostilities between a Crow and an Oystercatcher, and at all times, when near the Gulls' nesting haunts, found many broken eggs lying about, the work of the Carrion-Crow, no doubt.

ROOK (*C. frugilegus*).—I have nothing in my notes about this bird, but do not remember seeing one, and certainly there is no rookery. Perhaps it is not altogether surprising, as there is only about one place on the whole island suitable for their nursery.

RAVEN (*C. corax*).—Two specimens only came under my notice.

SKY-LARK (*Alauda arvensis*).—Common: Keeping preferably to the more cultivated parts.

SWIFT (*Cypselus apus*).—Nearly as frequently met with as the Swallow. They, in common with the Swallows, seemed more abundant on the western coast, and this was probably due to the fact that during the greater part of our stay there was a north-easter blowing, and the western side was more protected and warmer. This bird probably breeds in suitable crannies in the cliff-face.

CUCKOO (*Cuculus canorus*).—I have never seen more in one particular area. At the northern part of the island they were more commonly met with than anywhere, excepting perhaps Little Sark. They delighted in perching on the rocks strewn about above Les Boutiques caves, and sung the familiar song therefrom. On two or three occasions I heard the song rendered "cuckoo, cuckoo," and ending abruptly with "cuc," and also the other variation of "cuc-cuckoo." It is matter of some surprise that with so many Cuckoos in the district, and the amount of nests found, that not one contained a Cuckoo's egg.

KESTREL (*Falco tinnunculus*).—The only representative of the Raptorial birds, seen hovering over a field of young corn just before sundown on the evening of May 24th.

STONE CURLEW (*Edicnemos scolopax*).—Met with none of them, but was told by the fishermen that they were acquainted with it, and that it sometimes bred on the island.

GOLDEN PLOVER (*Charadrius pluvialis*).—None in Sark in May,

having migrated north to breed, but they are seen in countless hosts in early spring, probably when performing their migrations.

LAPWING (*Vanellus vulgaris*).—Same as last. I believe a great many more species of this order are to be observed in winter.

CURLEW (*Numenius arquata*).—On May 28th saw two of these birds on the rocky headland near Les Boutiques, at the northern end of Sark, and a few days later my friend saw a solitary bird in the same spot. At first I presumed that they would be non-breeding birds, having no occasion to go north, but one of our boatmen says that they do breed in small numbers on the Herm, an island between Sark and Guernsey, and that there are more about in the winter months.

CORMORANT (*Phalacrocorax carbo*).—Nesting in considerable numbers at various points along the coast, generally in a small niche in the perpendicular sides of the cliffs, and wholly inaccessible. One nest on L'Etac de Sark was empty, and this remark applies to another on the Grande Moie, from which the bird flew off. The fishermen hate the Cormorant, in common with the Guillemots and Razorbills, which, as they say, fly through the water as fast as through the air, and frighten what fish they do not devour. They are strict with their little laws in Sark, and bird protection takes the form of a fine of £5 for every egg or bird taken in the close season; but in spite of this the men are only too glad to shoot through the Cormorants' nests at breeding time whenever the opportunity presents itself. The Cormorants' chief breeding stations around the Sark coast are at L'Etac, probably on Brecqhou—the largest dependency, but did not land there—at Moie de Mouton, on Les Autelets, and Grande Moie. Of these, all except Moie de Mouton are isolated rocks, and the Moie de Mouton can only be reached in safety by boat. At Les Autelets there is one curious flat rock slightly inclined, on which the Cormorants love to sit and "hang themselves out to dry," and which is completely whitewashed with their excrement. This rock is much like a large altar, from which the group get the name of Les Autelets.

SHAG (*P. graculus*).—In less numbers than the last named, and breeding in the vicinity of Les Autelets, but impossible to reach their nests.

GANNET (*Sula bassana*).—Met with none of these magnificent birds in Sark, but I hear they are to be found earlier in the year. Saw two, however, about mid-channel between Guernsey and Weymouth.

COMMON TERN (*Sterna fuscata*).—Only a few individuals had

arrived by May 29th, the majority putting in an appearance during the first week in June. On the Moie de la Bretagne, where we lunched, a nest was found containing one egg. Within a few days our boatmen said there would be as many as two hundred of them frequenting this tumbled mass of rocks, which lies off the western coast of Little Sark.

OYSTERCATCHER (*Hematopus ostralegus*).—A fairly common and always pretty shore-bird in Sark, and breeding on the lower lying rocks of L'Etac; also on Moie de la Bretagne, where I found a nest containing two eggs. The fragments of a third were lying some few yards away, probably having been pilfered by Crows. This bird also breeds on Grande and Petite Moies, but found no nests there.

KITTIWAKE (*Rissa tridactyla*).—Breeding in considerable numbers at the Moie de Mouton wherever a suitable ledge in the perpendicular cliff permitted. In all cases their nests were totally inaccessible.

HERRING-GULL (*Larus argentatus*).—The commonest of all the Gulls, breeding in incredible numbers at a great many gulleries all around the coast, but in no case was it possible to approach the nests from the land, and none too easy from a boat. Examined some thirty nests at the various points touched at during our trip round Sark in a small boat. All of them were large, i. e. with wide diameters, but otherwise slight structures of dead grass and other withered herbage and seaweed, and placed in a hollow among the rocks, or in thick grass growing up the cliffs. Of all the nests I saw only one had more than two eggs, and that was a Lesser Black-back Herring-Gull's nest, containing one egg of the former bird and two of the latter. This seems rather curious, as the clutches are usually given as three, and that laying, generally speaking, was finished, I am perfectly sure, as the parents had all begun incubation, and some of the eggs I procured contained an embryo in a slightly advanced stage of incubation. At very low tide, when an expanse of sand is laid bare, the Herring-Gull is very fond of probing about for Sand-eels, and as I learn the Herring is never caught in these seas, the name gained from its habit in following shoals of Herrings becomes a misnomer.

LESSER BLACK-BACKED GULL (*L. fuscus*).—Breeding in numbers, but is not so common a species as the last named. There seems a strong social instinct between these birds and the Herring-Gull, nesting near one another, and even in the same nest, as already noted. The nests of the two species are to all intents and purposes identical both in position and materials, and the eggs themselves are not easy to

authenticate. One boatman says you can always tell, because the egg of the Lesser Black-back is darker in colour, i.e. the background is browner in this bird and greener in the Herring-Gull, and that in the former the blotchings assume a deeper intensity of colour as to be almost black in some cases, whereas in the Herring-Gull the markings never get to a much deeper shade than deep umber-brown. I am inclined to think he was not altogether wrong either, for some eggs I knew to be Lesser Black-backs were much darker than the Herring-Gull's, and two—one of each species—taken from the same nest, are quite dissimilar, one being dark, and the other—the Herring-Gull's—lighter. But some of the eggs obtained were intermediate in colouring between dark and light, and might equally well belong to either species.

GREAT BLACK-BACKED GULL (*L. marinus*).—Saw two of these noble birds on an isolated rock off the Courbée du Nez, at the northern end of the island. I am not able to say whether or not they breed hereabouts.

STORMY PETREL (*Procellaria pelagica*).—When on the Petite Moie, I most distinctly detected the musky odour that is always present near this bird's breeding haunt, and I have little doubt that a nesting bird was within a few feet hidden away in some secret crevice in the rocks. Our boatmen, too, noticed it, and, curiously enough, had never seen or heard of such a bird before; nor did their knowledge come forward when I referred to the Storm Petrel as "Mother Carey's Chicken." But since this pelagic little wanderer only comes to land for a few weeks to incubate its solitary disproportionate egg, and is very nocturnal in habits and small in size, it is perhaps no wonder that these fishermen have never noticed it.

RAZORBILL (*Alca torda*).—This bird and the next named are both called indiscriminately by the fishermen "Divers." They say they often take the Razorbill and the Guillemot on their lines when fishing at some considerable depth. In Sark the Razorbill breeds on Les Autelets, but apparently not nearly in such large numbers as the Guillemot.

COMMON GUILLEMOT (*Uria troile*).—Their chief, and, I believe, only breeding station is on Les Autelets, and here a considerable number were at all times of the day to be observed sitting on the ledges, no doubt incubating their eggs. Les Autelets are practically inaccessible, though they have been scaled by some foolhardy climbers, so it was impossible to get near the breeding ledges, but round the base of the rocks several broken eggs were found.

PUFFIN (*Fratercula arctica*).—I think L'Etac is their only breeding haunt, being the only suitable islet providing a sufficient amount of soft earth in which to make their burrows. As we landed the Puffins flew out, and wheeled round and round this limpet-shaped dependency almost as thick as flies. This was on May 29th, and our boatmen thought we were too early for eggs, but in this they were both assuredly wrong, for the Puffin is not a late nester; and, after feeling about in a great many of their tunnels, and finding only one egg, and that very stained and hard-set, I was fully convinced that instead of being too early, the great business of the year was practically over. I caught one in its burrow, and it offered not the slightest resistance. At close quarters the Puffin is a grotesque little creature, and it was with much interest that we had a somewhat convincing demonstration with regard to the wonderful power of its adze-shaped bill. A piece of stick was selected, and the mandibles fastened on it like a vice, and brought home to one the undesirability of having one's finger substituted for the stick. The sitting bird always squats in the hole, with its head towards the entrance, and feeling about in the hole is best done with a gloved hand, and, on touching the bird, immediately grasp it firmly by the head before pulling it out, and then such a calamity as experienced by the stick will be averted as regards the human finger.

NOTES AND QUERIES.

MAMMALIA.

Mus sylvaticus wintoni in Suffolk.—With reference to the note on the occurrence of this species in Suffolk by the Rev. Julian G. Tuck (*ante*, p. 266), I may mention that I have often caught specimens at Plumpton, in the parish of Whepstead, five miles south of Bury St. Edmunds, and also at Brettenham Park, which is about ten miles south-east of the same town. It does not appear, however, to be nearly as common as *M. sylvaticus*, though its large size and bright colour, especially the orange patch on the chest, at once attracts attention. Probably it will be found to occur throughout the district now that the difference between the two species has been pointed out (*ante*, p. 150), and the present one becomes better known. Whilst on the subject of Mice, I may add that the Common Field Vole (*Arvicola agrestis*) also differs very considerably in size, and on one occasion I remember catching such a monster at Brettenham Park that I thought it must have belonged to a new species, and forwarded it to London for examination, but it was reported to be only an exceptionally large specimen of the common species; and I notice in Bell's 'British Quadrupeds,' 2nd edit. p. 826, he refers to two other forms which were previously described as separate species, viz. *A. neglecta* and *A. britannicus*, of which, however, he says: "The characters on which their distinction was founded were merely external differences of tint and proportions, which cannot in the least be depended on in so variable and difficult a family as the Voiles." The one I caught was certainly far larger than any Field Vole I have ever seen in England before or since, and I have mentioned the fact in case the subject may be brought up at any time hereafter for discussion.—E. A. BUTLER (Plumpton House, Bury St. Edmunds, Suffolk).

Goat suckling a Lamb.—There is on the farm of Kilbride Bennan, Arran, a Goat, the property of Mr. Murchie, farmer there, which yearly suckles a lamb. The Goat is now thirteen years old, and every year she has had a lamb put to her, which she readily takes to, and suckles

as if it had been her own kid. During the period of her suckling she has a plentiful supply of milk sufficient for the wants of her foster child; indeed, in one year she had two lambs put to her, and evinced great grief when one of them died. The most curious point, however, is that she has never had any progeny of her own, and has never had converse or association with any of her own species. I would be glad to hear if any case of a similar kind is known.—J. MACNAUGHT CAMPBELL (Kelvingrove Museum, Glasgow).

The Harp Seal (*Phoca groenlandica*) in Great Britain. — In a letter dated March 28th, 1903, Mr. W. R. Hall Jordan, of Teignmouth, informed me that on March 10th he saw a very large Seal being wheeled about Teignmouth in a barrow by some fishermen. It had been shot in the River Teign, where it had been seen for four days previously. He describes the colour of the body as white, and the muzzle and front part of the head as black. This was obviously a specimen of the rare *Phoca groenlandica*, Fabr., and it is unfortunate that subsequent enquiries as to the disposal of the remains of this specimen have hitherto proved unsuccessful. The 'Manchester Evening News' of March 28th, 1908, contains a paragraph stating that a Harp Seal (*P. groenlandica*) was killed in the Firth of Forth near Grangemouth, "a few days ago." Possibly the publication of these imperfect records may lead to the discovery of fuller details respecting the occurrence of this rare and interesting visitor.—FRANCIS C. R. JOURDAIN (Clifton Vicarage, Ashburne, Derbyshire).

A V E S.

Strange Nesting-place for a Mistletoe Thrush (*Turdus viscivorus*). Referring to the note on this subject (*ante*, p. 226), if Mr. Whitaker will refer to Messrs. Ussher and Warren's 'Birds of Ireland' he will find a couple of instances where this bird built on the ground. I found one nest this year in a tuft of bent-grass at the edge of a sand-bunker on the links of the Co. Lough Golf Club at the mouth of the Boyne. There were four eggs in the nest, and the bird was sitting on it. Unfortunately the caddies robbed it. This was about June 19th, so it was probably a second laying. There are plenty of trees within easy reach. The Mistletoe Thrush is supposed to be well able to defend its nest against other birds, but I saw a Rook this spring deliberately devour the newly-hatched young of a pair of Mistletoe Thrushes which had built in an apple-tree in my orchard. The parents were dashing about in great distress, but the Rook paid no attention to them.—G. H. PENTLAND (Black Hall, Drogheda).

Grasshopper-Warbler (*Locustella naevia*) in the Isle of Man.—When visiting the Curragh (an imperfectly drained depression of considerable extent at the foot of the Northern Hills, between Ballaugh and Sulby), with P. G. Ralfe and T. H. Graves, on May 80th last, we had the good fortune to hear the strange song of this Warbler. Although we had spent many hours in the Curragh, it was not until we were returning at about 9 p.m. that we heard the first song. Soon after we heard another, and altogether in a walk of half a mile in one of the lanes crossing the swamp we heard at least six birds singing; sometimes two could be heard together. This bird has not been noticed in Man before, but, judging by the number we heard in only a small part of this area, there must be a considerable number in the district. We stalked, and saw one of the singing birds at night, but the next day, after a prolonged search, we failed to see the bird or hear its song. [Ralfe heard another bird singing in the swamp near Ballacraine on June 7th.]—FRANK S. GRAVES (Ballamoar, Alderley Edge).

Nesting of the Pied Wagtail (*Motacilla lugubris*).—I believe, as a rule, this species only nests twice in the season, but this year the pair that are in my garden have nested three times, and the hen bird is at present (July 27th) sitting on the third clutch of eggs close to the window of the room in which I am writing. There are only one pair of birds, and they arrive annually about the middle of March. I did not examine the first nest, but I saw four or five young birds running about on the lawn with the old birds at the end of April and beginning of May, and early in June a second nest was built in a hole in the wall, about three feet from the ground, just outside the window of my sitting room. A Long-tailed Field-Mouse (*Mus sylvaticus*) disturbed the nest one night, and carried off an egg, but the remaining four were hatched, and the young birds reared, and these also, like the first brood, frequented the lawn for several days with their parents. About July 20th I found the hen bird sitting on another clutch of eggs in a nest about ten yards from the site of the second nest, and on the same wall, about eight feet from the ground, but as it is in a creeper behind some trellis, and in rather a difficult place to approach without disturbing the sitting bird, I have decided not to examine it. Probably, however, it contains four or five more eggs.—E. A. BUTLER (Plumpton House, Bury St. Edmunds, Suffolk).

Tree-Sparrow (*Passer montanus*) in the Isle of Man.—On July 5th, 1902, I saw a pair of these birds in the trees bordering the high road at Kirby, near Douglas. These are the first birds of this species I have seen in Man; they probably had a nest close to where I saw

them, as there are numbers of old trees on this estate, where suitable nesting-places would abound. This year (on June 22nd) I saw two, or possibly three, Tree-Sparrows at Ballamoar, Kirk Patrick, feeding in the farmyard with House-Sparrows, Chaffinches, and Yellowhammers. There are many old trees on this estate also. (Since writing the above I have heard from Mr. Ralfe that a Mr. F. W. Leach shot a specimen at Road Island, Braddan, on Jan. 5th, 1896, and he has observed the species on other occasions near Douglas.)—FRANK S. GRAVES (Ballamoar, Alderley Edge).

Breeding Habits of the Pied Woodpecker.—When I was staying with my brother in Northamptonshire in June, we went one evening (28rd) for a stroll in a Fox-cover of mixed timber-trees with a heavy growth of big elder bushes. We had just visited the Badger-earths, and wondered afresh at the "roads" the Badgers had made when dragging herbage, sticks, leaves, &c., into their holes; and wondered too at the great patches of undergrowth beaten down flat by the Foxes, and at the numerous remains of their good living. The light was failing somewhat under the fir-trees as we walked along one of the rides, and a Fox had just crossed in front of us, when we heard a sound like the cry of a Barred Woodpecker, but, unlike the cry of that bird, the sound was continuous. We soon traced it to a hole in an old elder-bush, which evidently contained a brood of young Woodpeckers. The cries of the young birds were redoubled when I touched the tree, and the young birds, thinking that one of their parents had settled on it, tumbled up to the entrance in a hurry to be fed; but they dropped back again instantly, only affording me a momentary glimpse of them. And I may add that, although I subsequently tried several times at intervals, I could never get another rise out of them. The trunk of the elder-bush was only about ten inches in diameter, and the hole not more than three feet from the ground. This seems a curious nesting-place for the birds to choose, for there are plenty of good-sized trees in the cover, some of which are quite riddled with holes bored by the Green Woodpeckers, which are always to be heard and seen there. But I do not think that the Pied Woodpecker (*Dendrocopos major*), to which bird the nest proved to belong, cares to cut out a clean hole entirely for itself (as the Green Woodpecker does) if it can get one partly formed naturally. This particular hole was at a place where a branch had long ago been torn off, and the weather had got in at the wound and rotted the wood for some distance down into the stump of the tree. The birds had merely turned out the rotten wood (which lay at the foot of the tree), worked the sides of the hole out a little,

and rounded off the edges of the entrance-hole, which was oval in shape, not round. I saw a Pied Woodpecker's nest in Wales last year, which was somewhat similar. It was in a small oak about twelve feet from the ground, in a place where a branch had been torn away from the trunk ; the young birds were very noisy. To return to the former nest : when we were examining it we could hear the alarm-note "gik" or "chick" of one of the old birds, so we retired into the cover on the other side of the ride to watch. In a few minutes the old male came down and settled on the side of the trunk (where the bark was quite worn by the birds' feet), and then sidled round to the hole in front. The cries of the young were vociferous. The male remained at the entrance for a minute or two, popping his head forward into the hole, and, I think, feeding the young ; then he went inside for a few minutes, came out, and flew away. It was now dusk, and we went home. Returning to the spot the next morning, we noticed that we could hear the young birds quite plainly when we were sixty yards from the tree. We repeatedly saw both old birds close to the tree, and they even settled on it ; but, though we had hidden ourselves much more carefully than on the previous evening, and at a greater distance from the tree, they would not feed the young, or go quite to the hole while we remained. While watching them I repeatedly heard one of them (certainly the female in some cases) utter a curious cry, sounding like "trah" or "tray," but the note they used chiefly was the ordinary alarm cry "gik" or "chick." I almost wonder some of the numerous Foxes (one of which crossed the ride in front of us about noon that day) had not tried to get at these young birds, which took such pains to betray their presence.—O. V. APLIN (Bloxham, Oxon).

Honey-Buzzard in Cheshire.—On the evening of June 5th an immature Honey-Buzzard (*Pernis apivorus*) was shot in a ride in one of the woods in Tatton Park. The bird lacks the grey head which characterizes the adult, but resembles in the mottled brown and white of the under parts, and the general character of its upper plumage, an old male from Altenkirche, which is in the Dresser collection in the Manchester Museum, and is figured on the third plate devoted to this species in the 'Birds of Europe.'—CHAS. OLDHAM (Knutsford).

British Grey Geese.—I am glad to see this matter cleared up, as I consider it to be, by Mr. H. W. Robinson. I have compared several specimens, supplied to me from the Outer Hebrides and Tiree Point, and a considerable time ago came to the same conclusions as he has done—that differences in coloration are due to age ; that differences in size are due to age ; that the dark-breasted White-fronted Geese

are old birds, and the mottled-breasted birds are young ones ; that the white on the face, and especially on the lower mandible or feathers of the chin, are signs of immaturity and not of old age ; and that coloration of the soft parts is also no criterion. North American Snow-Buntings of large size might be separated similarly from the European ; the dark-backed Sand-Martin of east of the White Sea might be separated from our Sandy-backed Martin of Britain, and perhaps have some right to be described, as the usual order of geographical variation between eastern and western specimens reversed—that is, we might expect to find lighter-coloured and not darker-coloured Sand-Martins to the east than in the west, but this is not so. I suspect old Aristotle gauged these Geese fairly well, as described in 'Zoologist' (*ante*, p. 248), and present-day naturalists will not be very far out if they leave them alone now. I write, with the breast of a White-fronted Goose before me, which is almost black, the broad bands merging into one another all over ; and the other extreme, faint grey breast mottled all over with black ticks. This latter bird has the white chin. An intermediate one has dark black bands on breast showing signs of merging, and has no white on the chin nor below the gape, only on the front of forehead. With regard to *Anser rubirostris*, I have no remark to make, except that *free translation* of German sentences, graceful or ungraceful, is a " ticklish tail to tackle " at any time.—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

Tufted Duck in Merionethshire.—When passing Bala Lake in the train early in the morning of May 28th, I saw, close inshore, near the upper end of the lake, three Tufted Ducks (*Fuligula cristata*), which seemed to be a male and two females. I passed the lake on the 12th, and again just a month later, without seeing them ; but Mr. A. H. Macpherson saw probably the same three Tufted Ducks on May 29th and June 1st, each time about the same place. I do not remember if this Duck has yet been recorded as breeding in Wales ; neither do I know if the Ducks I saw were breeding.—O. V. APLIN (Bloxham, Oxon).

Stock-Dove (*Columba oenas*) in the Isle of Man.—Frequently during the last few years I have seen a few Pigeons which I thought were Rock-Doves or feral birds, about a certain part of the coast on the west of the island, but, owing to their wildness, I could never get near enough to them to see definitely to which species they belonged. On May 18th, 1902, I disturbed a pair from some broken piled-up rock full of crevices and holes near the foot of a steep sea-brow. Feeling sure these could not be Rock-Doves, I hid and watched for

their return, and then saw they were "Stock-Doves," and were without doubt nesting in the crevices. Although I searched carefully, I failed to find a nest. Soon after, near the same place, I saw three more birds, and a day or two later, another flying over an inland rocky mountain slope, where I had been told, when a boy, that Rock-Doves nested. It seems that only one other Stock-Dove has been recorded in the Isle of Man, that one being shot in November, 1900, from a flock near Castletown.—FRANK S. GRAVES (Ballamoar, Alderley Edge).

The Rock-Dove (*Columba livia*) in Somerset.—I think the remark quoted by Mr. Stanley Lewis (p. 280) rather tends to prove that the birds in question were *not* genuine wild Rock-Doves, for these birds do not have "checkered wings," although "blue checker" is a common colour in blue dovecot Pigeons.—O. V. APLIN (Bloxham, Oxon).

[Probably Mr. Stanley Lewis can procure a skin, and thus settle the question one way or the other.—ED.]

Water Rail (*Rallus aquaticus*) in the Isle of Man.—On June 6th, 1908, when again searching the Curragh, I flushed a Water Rail from a nest containing eight eggs, and found two other nests empty. On June 21st I found a fourth nest, with six eggs, within about forty yards from the first one with eggs. I have only heard of one nest of this bird having been found in Man before, but each winter a few birds are shot. Possibly this is not an uncommon nesting species in this district, and other similar places in Man.—FRANK S. GRAVES (Ballamoar, Alderley Edge).

Breeding of Lesser Black-backed and Herring-Gulls.—Does Mr. Elms, in his "Bird Notes in Sark" (*ante*, p. 261), mean that he actually saw the Lesser Black-backed Gull (*Larus fuscus*) and Herring-Gull (*L. argentatus*) sitting side by side on one nest?* Otherwise, I fancy it would be difficult to prove the statement of the boatmen that these birds commonly lay in and share the same nest. Fishermen and others will often tell you that they can distinguish at a glance the eggs of these two birds; if so, they have a keen sense for minute differences, which has been found lacking in many an eminent ornithologist, Seeböhm included, who says: "It is very important that eggs of this species (i.e. *Larus fuscus*) should be carefully identified, as many of them are indistinguishable from those of the Herring-Gull" ('British Birds,' vol. iii. p. 821). On Mullion Island, off the Cornish coast, there is a large colony of Herring-Gulls, which I frequently visit. Amongst the nests of these birds, thickly scattered on the top of the

* Mr. Elms has some further remarks thereon in this issue (*ante*, p. 808).—ED.

island, both on the bare rock and the grassy portion, a few pairs of the Lesser Black-backed nest; while on a small island near Oban, N.B., the reverse is the case. This colony is that of the Lesser Black-backed, with an occasional pair of Herring-Gulls. In both these colonies I have identified and examined many nests, and for nearly every shade of colouring of the eggs of the one bird have found a similar egg of the other, except that I have not as yet identified an egg of the Herring-Gull, with the peculiar black-ink-like scratchings, which are sometimes found on the egg of the Lesser Black-backed. With most of the Gulls it is common to find the three eggs differing very much in colour, markings, and size, but this does not prove that they are not the eggs of the same bird; nevertheless birds may, and probably do, make mistakes sometimes, especially the gregarious species, which possibly also accounts for the occasional clutches of more than three eggs in the nests of Gulls. Only this season I found in Scotland the nest of a Mallard (*Anas boscas*) containing ten similar and typical greenish-white eggs of the Wild Duck, one of them which I have measured being 2·2 in. \times 1·7 in., while an eleventh egg in the nest was much larger, and of a buffish tint, measuring 2·5 in. \times 1·8 in. This latter I take to be the egg (which it resembles in size and tint) of the Red-breasted Merganser (*Mergus serrator*), deposited in the Mallard's nest.—H. HOLROYD MILLS (Treslothan Vicarage, Camborne, Cornwall).

Birds mentioned by Aristotle.—When Aristotle says (*ante*, p. 247) that the *laros* hatches out its young in summer (whereas the *aithyia* does so in early spring) he was perhaps alluding to a Tern ("among rocks" need not necessarily mean "in rocks"). Terns in this country breed much later in the year than Gulls. *Laros* in Greek seems to include both Gulls and Terns (*vide* Professor D'Arcy Thompson's 'Glossary of Greek Birds,' p. 111); *aithyia* is clearly some kind of Gull.—O. V. APLIN (Bloxham, Oxon).

Birds and Sound of Firearms.—Seeing Mr. Distant's interesting note about birds under fire (*ante*, p. 276), I thought the following might interest some readers of this Journal:—About two years ago I was trying the pattern of a new 12-bore gun, and alongside me, in a hedge not four feet away, was a party of Blue Tits (*Parus cœruleus*) hunting for insects. I fired off a good many cartridges, but it did not seem to disturb them in the least. Perhaps these small birds, like the Weaver and Tits, have not such highly developed brains as to make them take fright at sudden noise; their power of hearing is probably not so well developed as that of sight, for one often finds a sudden movement frightens a bird much more than a noise.—W. H. WORKMAN (Windsor, Belfast).

NOTICES OF NEW BOOKS.

The Big Game Fishes of the United States. By CHAS. FREDERICK HOLDER. New York : The Macmillan Company.

THIS book is addressed to the angler, but it is also an addition to the naturalist's library. To capture with rod and line piscine monsters weighing from 200 to 400 lb. is a new adventure for Mr. Piscator, and many members of the gentle craft will register a resolve to visit the Floridan and other American oceanic fishing grounds. But the zoologist will not read these pages in vain; many facts are recorded which only an angler would collect and a naturalist observe. Mr. Holder has written lives of both Charles Darwin and Louis Agassiz, and is therefore considerably more than the ardent sportsman.

The Black Sea-Bass (*Stereolepis gigas*) frequents the submarine forests of the Californian coasts. "The trees are represented by the so-called kelp, the *Macrocystis*, which attains a length of several hundred feet, rising upward in broad deep green leaves of gigantic size, which swing in the current, undulating like living things, forming a maze or forest, which, while easily seen, is a closed region even to the diver, owing to the convolutions of the plants." A specimen of this fish, weighing 419 lb., has been taken with rod and line. The Bluefish (*Pomatomus salatrix*) is another so-called game-fish, affording much sport to the angler. These fish are most voracious; the author has seen them charge a school of small Mackerel, "leaving the water filled with silvery fragments," and when "crazed by the excitement of the chase, amused themselves by biting the fleeing victims for the mere wanton pleasure of killing." Prof. Baird estimates that a thousand millions of Bluefish may be found off the American coast in summer, and if each one eats ten small fish per day, then ten thousand millions of small fry must be consumed daily by these fishes alone. Another destructive fish is the Drum (*Pogonias cromis*), visiting the Oyster-beds, and crushing the succulent bivalves like paper in its powerful jaws. These fish are often found in vast schools, each fish weighing from forty to

sixty pounds, and one of these devastating hosts was captured in a seine a few years ago, and numbered 218, and weighed nearly 9000 lb. Our space forbids further extracts, though we might quote equally interesting facts relating to the Tarpon (*T. atlanticus*), which has been seen by an angler to make "a thirty-foot horizontal leap," and has been captured by rod and reel of a weight of 213 lb. The Leaping Tuna (*Thunnus thynnus*), of which specimens weighing 1000 lb. have been harpooned, and an example weighing 251 lb. fairly caught with usual angling tackle, divide into small squadrons of from fifty to two hundred, and move "in the general form of flying ducks or geese, a large triangular figure, with one or two large fishes perhaps in the lead." But we must pause—the subject is too enticing; the book can be read with pleasure and instruction by both naturalist and angler, and it is beautifully illustrated.

A Naturalist's Calendar kept at Swaffham Bulbeck, Cambridge-shire. By LEONARD BLOMEFIELD (formerly JENYNS). Edited by FRANCIS DARWIN. Cambridge: University Press.

THIS Calendar, relating to plants, birds, and insects, was founded on observations made near Cambridge between the years 1820 and 1831, and is a model of method in bionomical record. Blomefield's observations are neither trifling nor redundant. He is almost painfully concise and accurate. He tells us that his school-fellows nicknamed him *Methodist*, and that through life "I have been a man of few words." Perhaps the most momentous event in his life was his refusal to go as naturalist with FitzRoy in the 'Beagle.' This may be said to have prepared the way for the foundation of the "Darwinian epoch." We are all sometimes dumfounded when we see the mere accidents that seem to promote or prevent man's intellectual evolution. Remove the 'Voyage of the Beagle' from Darwin's career, and to-day the whole of modern thought might have been of a totally different trend. And this was made possible by the refusal of Blomefield "after a day of hesitation." He, however, subsequently described the fish in the "Zoology" of the 'Voyage.' As a naturalist, Blomefield was known for his "minute and scrupulous exactness in matters of fact."

has been made in the study of this group. In the 1887 edition of the 'Natural History Museum Catalogue' there are defined—

44 species of <i>Chamaleon.</i>
3 " <i>Brookesia.</i>
2 " <i>Rhampholeon.</i>

At the present time there are in this unrivalled collection—

60 species of <i>Chamaleon.</i>
4 " <i>Brookesia.</i>
4 " <i>Rhampholeon.</i>

Werner,* in his recent list, gives—

73 species of <i>Chamaleon.</i>
7 " <i>Brookesia.</i>
5 " <i>Rhampholeon.</i>

There were in 1887 only eight species of East African *Chameleons* listed in the Museum Catalogue, and one of *Rhampholeon*; now we have

18 species of <i>Chamaleon.</i>
3 " <i>Rhampholeon.</i>

While the new list already quoted shows

26 species of <i>Chamaleon.</i>
5 " <i>Rhampholeon.</i>

The separation of these animals into species (as in many other groups) requires great care, and it is due to such careful systematists as Mr. Boulenger and Dr. Werner that several have been added which otherwise would probably have been overlooked. There is even now great diversity of opinion among specialists of this group regarding the value of certain characteristics for specific purposes, and it is with these and other interesting features of the East African Chameleons that the writer intends briefly to deal.

We can group the species under several well-marked headings, the first as the *C. gracilis* group, which comprises four species separated mainly by the size of the occipital lobes, and the presence or absence of a tarsal spur.

C. gracilis.—Distinct indications of occipital lobes, not movable. Male with tarsal spur.

C. roperi.—Occipital lobes well developed, but small, *entirely separated from each other*. No tarsal spur.

* "Prodromus einer Monographie der Chamaleonten," von Dr. Franz Werner ('Abdruck aus den Zoologischen Jahrbüchern, 1902').

C. quilensis (= *parvifobus*, Blgr.).—Occipital lobes larger than *C. gracilis*. Male with tarsal spur.

C. dilepis.—Occipital lobes larger than *C. quilensis*, and in contact with each other in the middle. Male with tarsal spur.

It is stated by Werner that he has examined a male *C. roperi* which possesses the tarsal spurs; he therefore, with Boettger, regards it as only a variety of *C. dilepis*. I have, however, examined the five specimens of males in the Museum collection, but could not find one in which the spur is developed. But for this character it would be pardonable to confuse *C. roperi* with either *C. dilepis* or *C. quilensis*, as the configuration of the lobes of *C. roperi* varies considerably, although always conforming to the characteristic of being separated on the median line.

This variation of the occipital lobes is also prevalent in the species *C. quilensis*, as a female specimen labelled as from the Niger has the lobes much as in *C. roperi*, a species believed to be only found in East Africa.

Boettger also considered that the difference in size of the lobes of *C. dilepis* and *C. quilensis* only entitles the latter to rank as a variety of *C. dilepis*. I find, however, that the character is well marked and constant, there being no connecting variations, and I see no reason therefore for not regarding them as distinct species.

The type (*C. isabellinus*), which Günther separated by reason of "the large scutes of the occipital flaps and of the occiput," I am forced to the conclusion is only an extreme variety of *C. dilepis*, on comparing it with the Museum series of the latter (which has been considerably augmented since the describing of *C. isabellinus*). The large scutes of the occipital lobes, to which Günther attaches so much importance, are in three longitudinal rows, and from that number I find among the specimens of *C. dilepis* a complete gradation to the typical form of four, five, and six more or less well-defined rows. The general scaling also is variable, being on some specimens flat and on others tubercular.

C. levigatus, which has been confounded with the West African *C. senegalensis*, is closely related to the species of the first group, but entirely lacks the occipital lobes.

The second group of three species (*C. biteniatus*, *C. ellioti*, *C. hoehneli*) is interesting, as it introduces the question of gular

pouches found in *C. ellioti*, and which is to be mentioned later, for the general variability of outline, height of parietal crest, and of scaling in *C. ellioti* and *C. bitæniatus*. Of the three species, *C. hoehneli* is the most easily distinguished on account of the tubercular nasal protuberance; for this reason therefore it is difficult to understand why Werner should regard it as only a variety of *C. bitæniatus*.

It is worthy of mention here that the Museum collection contains one female specimen of an apparently intermediate form between *C. bitæniatus* and *C. hoehneli*: no rostral appendage, scales tubercular, gular fringe more pronounced than in *C. bitæniatus*, the general form more stumpy than in *C. hoehneli*; it is at present classed as *C. bitæniatus*, but it is likely to prove a new species.

The third group contains most of the species possessing a rostral appendage, fully developed generally in the male, only rarely in the female, in which they are more often represented by incipient protuberances. This condition of things is apparently an interesting parallel to the history of the evolution of horned mammals.

In the first edition of the 'Descent of Man,'* Darwin stated "as probable that horns of all kinds, even when they are equally developed in the two sexes, were primarily acquired by the male in order to conquer other males, and have been transferred more or less completely to the female"; the subsequent palæontological evidence has tended to confirm this.

Dr. Forsyth Major † has pointed out how the oldest members of the Deer family from the Oligocene were absolutely devoid of antlers, while later, not only did the males possess them, but instances are on record of their occurrence in females, although up to the present day the great majority of females of the *Cervidæ* are, as a rule, devoid of antlers. The two recent species of Giraffe develop horns in both sexes, but in their Tertiary ancestors, the Samotheriums, the females were only beginning to develop horns, which primarily were male sexual characters. In the *Bovinæ* no instance of the occurrence of hornless females in recent wild bovine animals is known. It is clear that this is only

* Charles Darwin, 'The Descent of Man and Selection in Relation to Sex,' 1871, vol. ii. p. 248.

† Geol. Mag. decade iv. vol. viii. No. 444, p. 241, June, 1901.

a recent acquisition, for Dr. Major has described a female hornless skull of *Bos etruscus* from the Pliocene.

To the evolutionist these facts are full of significance, as showing evident progress in the last chapter of the earth's history and transformation, and progression of the whole species. The Chamaeleontidae show several stages in this advancement. In *C. melleri* the transference has been completed, the female possessing the development in as perfect a degree as the male. It has been only partly performed in *C. xenorhinus*, the female possessing only two incipient protuberances; while in *C. fischeri* the horns are not apparent at all in some females, whilst they are present in others.

The form of the rostral appendage varies in its formation both as regards shape and composition.

C. jacksoni.—Male with three long conical processes, with an outer segmented horny sheath directed forward and curved upwards; these processes represented in the female by small conical scales.

C. johnstoni.—Male with three rostral appendages, not so long as *C. jacksoni*; represented in female by conical scales.

C. xenorhinus.—Adult male with two long parallel compressed rostral processes covered with flat scales; represented in female by two small rostral protuberances.

C. fischeri.—Adult male with two long compressed rostral processes covered with tubercular scales, slightly diverging; not represented, as a rule, in female. It is a curious fact that they are present in some females.

C. tavetensis.—Two scaly rostral processes slightly diverging, and each with a double row of strong serrations dorsally.

C. melleri.—The dorsal surface of the snout extended into a compressed scaly appendage, continued into a horny pointed process in both male and female.

C. spinosus.—A compressed soft rounded dermal lobe covered with small pointed tubercles.

The fourth group comprises the limited genus *Rhampholeon*, distinguished from the Chameleons proper by the spinose scales on the soles of the feet and bicuspid claws. It is with this group that we can introduce the subject of the pits or pockets. The fact of the occurrence of axillary pits in the Chamaeleontidae was

first noticed by F. Mocquard* in 1893; this character, however, proved to be of no absolute value for specific distinctions, as pointed out by Boulenger in the 'Zoological Record' of the same year. To verify the statement of the latter author, I have examined a series of *C. brevicornis* (about fifty specimens), which is included by Mocquard in a list of those species possessing the pit *distinctly*. It was found to be visible only indistinctly in two or three of them. This character, however, is not developed in the East African Chameleons proper, but is to be found in *R. platyceps* and *R. brachyurus* very distinctly and constantly, both of which have been described since Mocquard's discovery. *R. platyceps* has the additional interesting feature of inguinal pits in both sexes, a character hitherto unnoticed in any Chameleons.

These inguinal pits apparently are different in structure from Mocquard's pits, which are to a great extent formed by the position of the shoulder as applied to the body. In *Rhampholeon* the pits take the character of large pores with small round external openings. An equally interesting character is the gular pocket, which takes the form of a slit-like fold on each side of the gular region, and are unnoticeable unless the folds are pulled apart, appearing externally as the longitudinal ridges found in many other species. My attention was first directed to this on examining the only Museum specimen of *C. goetzei*, before the publishing of Werner's work, who, I find, mentions the character in connection with the protrusion of the tongue. Tornier, the describer of *C. goetzei*, makes no mention of it. The same feature occurs in *C. ellioti* in varying conditions. A female specimen, 94 mm. in length, possesses a pouch measuring 12·5 mm., darkly pigmented. This pigmentation, however, is sometimes only partly present, or wholly absent.

An examination of the twenty-five specimens of *C. ellioti* in the Natural History Museum reveals the following variation:—

	Possessing pouch.	Not possessing pouch.	Deeply wrinkled.
Males	1	4	5
Females	9	6	—

It would appear from the foregoing that although the character is not sexual, it is adopted by the females much more extensively than by the males, for what reason it is difficult to say; neither is distribution the cause of it occurring as it does in specimens from Mount Ruwenzori, Uganda, and West Ankoli. It is interesting, however, from the fact that we might have here the first stages of a new development in this already highly specialized group.

LIST OF EAST AFRICAN CHAMELEONS.

<i>Chamæleon lavigatus.</i>	<i>Chamæleon tornieri.</i>
„ <i>gracilis.</i>	„ <i>quadricornis.</i>
„ <i>quilenensis.</i>	„ <i>pfefferi.</i>
„ <i>dilepis.</i>	„ <i>deremensis.</i>
„ <i>roperi.</i>	„ <i>temporalis.</i>
„ <i>bitæniatus.</i>	„ <i>johnstoni.</i>
„ <i>elliotti.</i>	„ <i>jacksoni.</i>
„ <i>hoehneli.</i>	„ <i>melleri.</i>
„ <i>tempeli.</i>	„ <i>spinosus.</i>
„ <i>goetzii.</i>	„ <i>tenuis.</i>
„ <i>affinis.</i>	<i>Rhampholeon kersteni.</i>
„ <i>tavetensis.</i>	„ <i>brevicaudatus.</i>
„ <i>xenorhinus.</i>	„ <i>platyceps.</i>
„ <i>fischeri.</i>	„ <i>spectrum.</i>
„ <i>fuelleborni.</i>	„ <i>robecchii.</i>
„ <i>werneri.</i>	

CAN AND DO BIRDS REASON ?

BY FRANK M. LITTLER, M.A.O.U.

THIS is a subject upon which much has and can be said on both sides. Opponents refuse to believe that any living being other than man is endowed with intelligence. On the other hand, the more liberal minded feel they cannot blind themselves to many facts that come under their notice, which cannot be accounted for except by the supposition of a reasoning capacity. The matter has been dealt with at some length by Wallace and Milne-Edwards; also incidentally by Dr. Carpenter in his great work on 'Mental Physiology.' Unfortunately the writings of the two first authors are not available, so that I am unable to ascertain how far their views correspond with those here expressed.

It is more particularly in regard to nest-building that discussion has been carried on. In the following notes other points will be considered, and an endeavour made to show that something more than "instinct" is possessed by our feathered friends. At the same time "instinct" and "intelligence" merge so into one another as to become almost synonymous terms, and what one would attribute to "instinct" another would contend was "intelligence." Dr. Carpenter* says:—"It would be impossible to find a better illustration of the contrast between Instinct and Intelligence as springs of action than is afforded by the comparison of the habits of birds in a state of nature with those which they acquire when brought into relation with Man. There can be no reasonable doubt that their architectural constructions, like those of insects, proceed from an inherent impulse, which prompts each individual of a species to build after one particular pattern, to choose a situation suitable to its requirements, and to go in search of materials of a certain kind, though others might be much more easily obtained. But, on the other hand, in the working out of this

* 'Mental Physiology,' p. 85.

design, it is clear that birds often profit by experience, and learn to use special means when special ends have to be provided for."

In any newly settled country or colony, where environments are constantly changing, there is a wider scope for observations on the intelligence of birds than in any highly and long cultivated area.

Dealing first with nest-building and some of its phases, it has been somewhere remarked that each species (of birds) has built on the same uniform plan from time immemorial. To this it may be answered—Yes, quite so, provided the environment remain unchanged.

The Golden Oriole, in its haunts undisturbed by man and his inventions, constructs a nest of long fibrous vegetable material flexible and strong enough for its purpose; but in localities where man's industry abounds, it borrows such materials as are best suited for its purpose, ignoring those nature has supplied. There is no alteration in the design of the nest, but simply the materials have been changed. This would seem to indicate that some degree of reasoning has been employed. The question arises, how was it that "foreign" material first came to be used? Was it curiosity that impelled the first Golden Oriole to try the strange substances, and, upon finding them so suitable, to communicate the fact to its fellows? I repudiate the idea that it was all a matter of "chance." Here in Tasmania there are at least sixteen species of birds that use "foreign" substances in the construction of their nests. Wool, cowhair, and horsehair are the commonest materials. Naturally there arises the question, what did these birds use prior to the advent of sheep, cattle, and horses, and what caused them to take to wool, cow-, and horsehair? Take one species, for example, the Yellow-rumped Tit (*Acanthiza chrysorrhoa*), whose bulky and globular nest is often almost entirely composed of wool, while to my knowledge one is never found that does not largely consist of this substance; and yet it is not really so long ago since domestic animals were first introduced into this island. The Lesser White-backed Magpie (*Gymnorhina hyperleuca*) constructs its nests of sticks, but sticks become scarce in well-tilled agricultural districts. The first reaper and binders introduced into Tasmania

were bound with wire, and when threshing, the wire from each sheaf was thrown into a heap. In one district only a few giant eucalypts remained in the fields, and as a natural consequence twigs became very scarce. In their plight the Magpies took to building their nests with wire cut from the sheaves. Some years later string binders superseded wire, and the Magpies had to make shift the best way they could. Wire was certainly a "foreign" substance; if the birds had been guided by mere blind "instinct," they would not and could not have come to such a substitute for twigs. The mere fact of their escaping an awkward predicament indicates that they were endowed with something more than "instinct." An English paper stated a few years ago, that at Stoke Newington Priory the use of wire for nests by the Herons was increasing, and that in the preceding spring nine out of sixteen nests were constructed with wire. There are records of other species of birds building with wire, and such like substances, when there was no apparent necessity for it; but in our utter ignorance of the birds' motives we should hesitate before calling such proceedings mere freaks without rhyme or reason. Dr. Carpenter mentions an incident which he terms "a very good example of intelligential modification of the instinctive tendency." The incident* is:—"A pair of Jackdaws endeavoured to construct their nest in one of the small windows that lighted the spiral staircase of an old church tower. As is usual, however, in such windows, the sill sloped inwards with a considerable inclination, and consequently, there being no level base for the nest, as soon as a few sticks had been laid, and it was beginning to acquire weight, it slid down. This seems to have happened two or three times; nevertheless the birds clung with great pertinacity to the site they had chosen, and at last devised a most ingenious method of overcoming the difficulty. Collecting a large number of sticks, they built up a sort of cone upon the staircase, the summit of which rose to the level of the window-sill, and afforded the requisite support to the nest; this cone was not less than six feet high, and so large at its base as quite to obstruct the passage up the staircase; yet, notwithstanding the large amount of material which it contained, it was known to have been constructed within four or five days. Now,

* *Loc. cit.* p. 86.

as this was a device quite foreign to the natural habits of the bird, and only hit upon after the repeated failure of its ordinary method of nest-building, the curious adaptation of means to ends which it displayed can scarcely be regarded in any other light than as proceeding from a *design* in the minds of the individuals who executed it."

Just another example of means to an end in nest-building before passing on. In 'Science Gossip' (vol. v. p. 363), Mr. W. W. Midgley contributed a note on a remarkable Song-Thrush's nest. This nest was built in a fir tree (*Pinus cembra*), in a position exposed to the full force of south-westerly winds. It was constructed in the usual fashion plus something extra. "Utilizing the dead stalks of last season's nettles, with bill and claws they had fastened the ends into the nest and round the trunk of the tree, again fastening the other ends into the nest. Still further to guard against the equinoctial gales, they had selected two of the largest stalks, slung them round the trunk at the nodes, about fifteen inches above the nest, and wove the ends into the sides of the nest so as to stay it." The birds had learnt by experience that unless some special precautions were taken their nest would be overturned by the first gale. They were gifted with sufficient intelligence to reason out the best method of averting an almost certain disaster. "If the birds had 'sense' enough to safeguard their nest, why did they not use the same 'sense' and remove to a safer situation?" I hear someone ask. I can only reply that birds much resemble human beings who develop an attachment for some thing or person; this attachment causes them much embarrassment, and compels them to perform certain acts hitherto unthought of. Nevertheless, not for worlds would they break that attachment. Our feathered friends and ourselves have an inexplicable bias in our natures—"pure cussedness" the Americans call it.

Why is it practically impossible to poison town-bred Sparrows? A few young birds sometimes fall victims, but very rarely indeed an old one. Is it "instinct" or "intelligence" that tells them that grain strewn promiscuously on the ground is not safe food? Many may say they have learnt by "experience," which implies they are endowed with something more than the mere blind "instinct," which some would have us believe was

their only possession. Then, again, how is it that birds know when their eggs have been touched, but still remain in the nest? Here, it seems to me, that the something we term "intuition" has been brought to bear. As is well known, the Bower-Birds (*Ptilonorhynchinae*) decorate their "playgrounds" and bowers with all manner of objects; and some species have a *penchant* for leaves, and those of a special kind. An interesting trick was played on one of these birds a short time since in a part of Queensland. All the leaves were removed from the playground, and others closely resembling but of a different variety put in their stead, but on returning shortly afterwards it was found that the bird had thrown out all the leaves put there, replacing them with others of its own choosing. There was no "instinct" about that; it was "intelligence" pure and simple; and it is marvellous to think that a mere bird could have distinguished between the leaves put down and those placed by human agency. The question arises: did the bird really know that its playground had been tampered with, or was the knowledge merely automatic; did it feel (without knowing why) that something was amiss, and righted it without intelligently appreciating the alteration? I cannot answer this, but leave the question to some one more fitted to reply.

I will now refer to an occurrence in which both "instinct" and "intelligence" were apparently at fault. In part iv. vol. ii. of the 'Emu' (the official organ of the Australasian Ornithologists' Union) there appears a note from a Queensland correspondent on an up-country station, relating to a Black and White Fantail (*Rhipidura tricolor*) that had been fighting its own shadow in a window for the past fourteen months, with scarcely a break, from morning to night. Now, if this bird had any powers of reasoning, should it not long ago have found out the futility of continuing to fly against the window-glass? Should not its deductive faculties (however feeble) have shown it the uselessness of wasting time and strength in fighting a shadow? But at the same time should not its "instinct" (we readily admit it being possessed by birds) have told it of its error? I am of opinion it should have instinctively become aware of its foolish action. From the above we get two negatives: first, want of reasoning power (with which we do not feel inclined to credit

the feathered tribe); second, want of instinctive faculty (which we unanimously place to their credit). But, as I have said before, "instinct" and "intelligence" are sometimes so closely related that it is almost impossible to separate them. It would appear that "instinct" is a something that cannot be properly defined. It is related in its action to the sub-conscious mind of the human being. We sometimes say that we "instinctively" feel, or know by "intuition" (which amounts to the same thing), that such and such a thing is going to happen. Yet we cannot give any reasons sufficient to satisfy ourselves or our questioners. Birds build their nests without any instruction in the art, for the simple reason their "instinct" guides and compels them to do so, that is, merely automatic; but it becomes volitional when the environment is changed, also the materials out of which nests can be constructed. It is here that their intelligence comes into play, showing that they are not the mere automatons some people believe them to be. We will say a House Swallow (*Hirundo neoxena*) builds its nest in a certain position; it is wantonly destroyed two or three times, and the bird gives up the attempt, and moves to a safer locality. Some may say it is prompted by its "instinct." Yes, quite so; but at the same time may it not be argued that it learnt or received an impression to the effect that the present locality was safe and the recently vacated one unsafe?

The more the subject is investigated the firmer grows my conviction that animals (such as quadrupeds and birds) which are continually associated with man, altering their habits, &c. (so as to conform with a new environment, or different conditions of living), are possessed of an intelligence and power of reasoning, small and feeble though these may be. The continual warfare waged on them has been instrumental in sharpening their faculties and developing traits that are absent, or, more properly speaking, lying dormant, while in their primitive solitude.

Launceston, Tasmania.

THE EARLY MORNING AND LATE EVENING SINGING OF SOME BRITISH BIRDS.

By W. GYNGELL.

Early morning.—On or about the 21st of June, for several years past, members of the Scarborough Field Naturalists' Society have joined in an all-night excursion. Leaving the town at about 10.30 p.m., the course usually taken is by fields and lanes to a small reedy mere situated at the corner of a wood which slopes up a steep hill-side to a heather-covered moor. By the mere, the entomologists of the party, when weather permits, indulge in sugaring; whilst those interested in the birds listen to the songs of the Sedge-Warbler (*Acrocephalus phragmitis*), Grasshopper-Warbler (*Locustella naevia*), Little Grebe (*Podiceps fluviatilis*) (whose bubbling "uddl-iddl-uddl-iddl-uddl-iddl" is its song), the croak of the Moorhen (*Gallinula chloropus*), the crake of the Land-Rail (*Crex pratensis*), the plaintive cry of the Lapwing (*Vanellus vulgaris*), the hoot of the Tawny Owl (*Syrnium aluco*), and the curious cry of its hungry young,—all sounds which may be heard throughout the night.

Passing into the wood, the entomologists call our attention to the perfectly audible sound made by night-feeding caterpillars at their work of destruction amongst the leaves of oak and hazel. The walk is then continued up on to the moors, where the chief object of interest is the incessant churring of the Nightjar (*Caprimulgus europaeus*), also to be heard all night. Then the party settles down to wait for the coming dawn. But all through the night, if fine, it is just sufficiently light to tell the time by one's watch. At about 1.30 a.m. our chatty party is hushed by the ornithologists, who are eager to catch the first sounds of song birds heralding the dawn. And we have not long to wait. On every occasion the Sky-Lark has been the first bird to sing.

The following time-table of song is the result of the writer's own notes for several years, and gives the earliest record for each species:—

Sky-Lark (*Alauda arvensis*), 1.51 a.m.; Song-Thrush (*Turdus musicus*), 2.9; Redstart (*Ruticilla phoenicurus*), 2.10; Cuckoo

(*Cuculus canorus*), 2.13 ; Tree-Pipit (*Anthus trivialis*), 2.14 ; Blackbird (*Turdus merula*), 2.15 ; Garden-Warbler (*Sylvia hortensis*), 2.20 ; Willow-Wren (*Phylloscopus trochilus*), 2.25 ; Black-cap (*Sylvia atricapilla*), 2.26 ; Robin (*Erithacus rubecula*), 2.29 ; Wood-Wren (*Phylloscopus sibilatrix*), 2.32 ; Yellowhammer (*Emberiza citrinella*), 2.37 ; Wren (*Troglodytes parvulus*), 2.48 ; Great Titmouse (*Parus major*), 2.57 ; Whitethroat (*Sylvia cinerea*), 2.58 ; Chaffinch (*Fringilla cœlebs*), 3.0 ; Chiffchaff (*Phylloscopus rufus*), 3.0 ; Corn-Bunting (*Emberiza miliaria*), 3.6 ; Whinchat (*Pratincola rubetra*), 3.12.

Sunrise at Scarborough, June 21st, 3.26 a.m. As the date of the excursion is at the time when so many species of birds are busily engaged in feeding their young, the songs of some are less frequently heard than they would be a few weeks earlier. This probably accounts for the Mistletoe-Thrush (*Turdus viscivorus*) and a few others not appearing in this list, which the writer hopes to extend in future years by making observations at earlier dates.

Late evening. — The following time-table is compiled from notes made by the writer during evening walks near Scarborough in June and July. As it is far from complete, perhaps some other bird-lovers may be induced to extend it :—

Mistletoe-Thrush (*Turdus viscivorus*), 7.15 p.m. ; Chiffchaff (*Phylloscopus rufus*), 8.0 ; Wood-Wren (*P. sibilatrix*), 8.0 ; Golden-crested Wren (*Regulus cristatus*), 8.5 ; Linnet (*Acanthis cannabina*), 8.14 ; Chaffinch (*Fringilla cœlebs*), 8.15 ; Great Titmouse (*Parus major*), 8.20 ; Wren (*Troglodytes parvulus*), 8.21 ; Garden-Warbler (*Sylvia hortensis*), 8.25 ; Greenfinch (*Ligurinus chloris*), 8.30 ; Swallow (*Hirundo rustica*), 8.31 ; Lesser Redpoll (*Acanthis rufescens*), 8.35 ; Willow-Wren (*Phylloscopus trochilus*), 8.35 ; Robin (*Erithacus rubecula*), 8.40 ; Hedge-Sparrow (*Accentor modularis*), 8.40 ; Meadow-Pipit (*Anthus pratensis*), 8.41 ; Cuckoo (*Cuculus canorus*), 8.42 ; Whinchat (*Pratincola rubetra*), 8.43 ; Lesser Whitethroat (*Sylvia curruca*), 8.45 ; Yellowhammer (*Emberiza citrinella*), 8.46 ; Blackcap (*Sylvia atricapilla*), 8.48 ; Whitethroat (*S. cinerea*), 8.50 ; Corn-Bunting (*Emberiza miliaria*), 8.50 ; Sky-Lark (*Alauda arvensis*), 8.52 ; Blackbird (*Turdus merula*), 9.0 ; Song-Thrush (*T. musicus*), 9.15.

Sunset at Scarborough, June 21st, 8.31 p.m., where daylight on this day is thirty-one minutes longer than at Greenwich.

THE ECDYSES OF SNAKES; AS OBSERVED IN BRITISH INDIA.

By R. M. DIXON.

THE skin in Snakes, as in other vertebrates, consists of two layers, namely, a superficial (*ectodermal*) and a deeper (*mesodermal*) layer. These two layers are respectively known as the *epidermis*, or scarf-skin, and the *dermis*, or true skin. The *dermis* is also known as the *derm*, *derma*, *cutis*, or *corium*. In the *epidermis* there are two layers. The outer layer consists of horny cells, and is termed *stratum corneum*, or the horny layer. The inner layer is composed of protoplasmic cells, and is known as *stratum Malpighii*, or the mucous layer. The inner layer always serves as a matrix for the formation of the horny layer, which is periodically cast off as one entire piece. The casting off of the horny layer of the epidermis, unaccompanied by organic development, is technically known as *ecdysis*. *Ecdysis* is a simple moulting as in Snakes, and is quite distinct from *metamorphosis*, which is a change in form or structure resulting from development, as in insects. The process of *ecdysis* in Snakes is just the same as what happens in the case of mankind, only human beings "shed their skins" bit by bit, almost every hour, while Snakes shed theirs as one coherent piece at periodical intervals. The moulting of feathers in birds is done on the same principle. The *ecdyses* of Snakes resemble the *ecdyses* of Crustaceans in a remarkable degree. The Common Crayfish (*Astacus fluviatilis*) of Europe has been known to moult its skin several times in the year, and I have noticed the Indian Rock-Lobster (*Palinurus vulgaris*) shed its skin as one entire piece.

In all the *Ophidia*, over the surface of the eye, there is a thin invisible miniature watch-glass-like capsule, which peels off with the horny layer of the epidermis when that is shed. When the time to moult the horny layer of the epidermis approaches, the Snake looks dull and drowsy. The usual colour of the body

grows dim, and the invisible capsule over the surface of the eye becomes distinctly visible as a thin whitish film. The Snake, when about to cast its horny epidermis, rubs its snout on a hard surface, by which the portions of the horny layer covering the lips are first separated. This being done, the Snake usually looks for a projecting point, on which, by the aid of its glutinous saliva, it manages to fix the portion of the horny epidermis detached from its lower lip, and gently pulls the whole horny layer over inside out so skilfully that frequently not a single break is made in the skin from head to tail.

When the Snake has finished its *ecdysis* it looks bright and lively, and, like a flash of lightning, darts forth from the spot where it has cast off its scaly imprisonment. The newly-cast skin does not preserve the coloration of the Snake, but it retains every minute detail of the scales, shields, plates, and sometimes even the pattern so distinctly, that the species of Snake to which the skin belonged is frequently identified with very little or no difficulty.

The time the Ophidians take to cast the horny layer of their epidermis is indefinite and very variable even in the same species. I have now and then observed that younger Snakes usually cast their epidermis more frequently than older ones, and that in captivity this does not happen so often as when at large. Adolescent and adult Snakes in captivity generally take from one to two months, whereas full-grown and older Snakes take from two to even six months. It is probable that aged Snakes cast their epidermis only once in the year. The interval between two successive moults is regulated as much by the *modus vivendi* as by the age of the individual Snake.

The cast skin is soft, delicate, and beautiful, but very light and fragile. Among the natives of India it is regarded as a sure sign of good luck by the orthodox people, who carefully preserve it as a book-marker. Medicinally, it is believed to be very useful in the treatment of ophthalmia. The newly-cast skin, along with the fruit of the date-palm (*Phoenix dactiflora*), if internally given, is said to be an efficacious remedy in the primary stages of leprosy.

Bombay.

ON THE NAMES OF THE TWO SPECIES OF SKUA WITH POINTED TAIL-FEATHERS..

By DR. EINAR LÖNNBERG, C.M.Z.S., &c.

QUESTIONS of nomenclature are often sore points to touch, but I think that most ornithologists will accept the following notes endeavouring to settle the names of the two species of Skua characterized by the pointed central tail-feathers. There has long prevailed a great confusion* in the names of these two species, which seems to still continue. The name *parasiticus* has been used sometimes for the Common Skua, at other times for the Long-tailed Skua, in accordance with different authorities. The name *parasiticus* is first given by Linnæus. In 'editio decima,' 1758 (p. 186), as well as in 'editio duodecima,' 1766 (p. 226), we find a bird named *Larus parasiticus*, with the following diagnosis: "L. rectricibus duabus intermediis longissimis." These words may be just as well applied to the one as to the other of the two species, for both have the two central tail-feathers prolonged, although in a different degree. As no conclusion can be drawn with certainty from this diagnosis, it remains to be seen whether any other information is given by the author; and this is provided in a most satisfactory manner. When Linnæus described the habits of his *Larus parasiticus*, he used the following characterizing words: "Piscaturæ ineptus (resp. ed. xii. inepta ipsa) agitat congeneres vomituque ejectum (resp. ed. xii. ut vomitu ab iis ejectum) cibum arripit (resp. arripiat)." It is evident that these words referred to the Common Skua and its parasitic habits, and cannot be applied to the Long-tailed Skua. But the matter is still further elucidated by the quotations of Linnæus. In the first place, he quotes himself in 'Fauna Suecica,' and in 'It. W.göt.'—that is, 'Wästgöta-Resa'

* Prof. Newton says, in his valuable work, 'A Dictionary of Birds,' "Their nomenclature is an almost bewildering puzzle."

(Stockholm, 1847); and, in addition, a statement by Nils Gissler ("Anmärkningar om Labben-Sterna, rectricibus maximis nigris Faun. Suec. 129") in 'K. Sv. Vet. Acad: Handl. 1753.' Let us now examine what is communicated in these quotations about this bird. In 'Fauna Suecica,' Linnæus informs us that his "Sterna rectricibus maximis nigris" is to be found "in Angermannia,"* a province of Sweden, in which the Long-tailed Skua is not to be found, and in "Finmarkia et alibi ad mare" (!) As the Long-tailed Skua does not breed on the sea-coast, and is not properly a marine bird, this note cannot probably refer to it. But a still more powerful argument is found in Linnæus's narrative of his 'Wästgöta-Resa,' because he there gives a full account of what he observed with his own eyes at Marstrand, on the west coast of Sweden. I wish I could give even an approximate idea of Linnæus's vivid, expressive, and, at the same time, humorous, style in the following modest translation: "Eloft was here (at Marstrand) the name of the blackish sea-gull that cannot plunge down in the sea itself to catch fish, but is only created a robber among the sea-gulls. One saw with interest how this Cossack pursued the other gulls as soon as they had caught a fish, and did not cease to pursue them till the gull had vomited up the fish he had caught and already packed in. I have seen with astonishment that a tame gull, which I have had several years in the garden of the Academy (Upsala), even if it has got ever so little food, instantly vomited it up if somebody pursued it a little afterwards. This faculty of easily vomiting, the Creator has used for the support of our Elof's family; for, as the gulls often fish more than they ought to, they can easily afford to pay tribute to Swartlassé; † but, on the other hand, Nature has so arranged it that Labben§ may not increase too much, and therefore it is also the rarest of all the gulls. To this is added that this Struntjagar|| is not very

* No doubt he had got this information from Artedi, who had lived in that province.

† The fishermen's name for the Common Skua in Bohuslän, Swedish west coast.

‡ Another Swedish name for the Skua, alluding to its blackish colour.

§ A third Swedish name for the Skua.

|| Another name.

squeamish; for sometimes the gulls must, when they have nothing on the market-place, open the back door and throw at him spoiled food, which he takes for good as well. · Swartlasse is very adroit, so that he always catches the food in the air when it is thrown at him by the gull. Nor is he shy, for when the fishermen see him, and cry, 'Elof, Elof,' with outstretched arm, and showing him some little fish, Elof comes flying towards the boat, and catches the fish as soon as it is thrown." . . .

That every word of this description applies to the Common Skua, and not to the Long-tailed, is apparent to everyone who has any knowledge about these birds. The Long-tailed Skua is also not to be found on the Swedish west coast, where Linnæus made these observations, but where the Common Skua is not scarce.

The third of the quotations from 'Systema Naturæ' refers to Nils Gissler's account, as is already mentioned. This conspicuously refers to the Common Skua (*not* the Long-tailed). The following points are conclusive. Gissler mentions the dimorphism of the Skua, although he erroneously believes it to be a sexual dimorphism, and says that the male is more blackish. It can nevertheless not be referred to the Long-tailed Skua,* for it does not coincide with the information that the bird in question lays its two eggs on the uttermost rocks in the archipelago, while the Long-tailed species in Scandinavia only breeds on the fells of Lapland and adjoining parts. Thereafter Gissler describes the parasitic habits of the bird—how it robs the Gulls, &c.; how rapid and dexterous it is in its flight, and how it can be attracted by the fishermen throwing at it a herring, or some other eatable thing, and so on; all facts referable to the Common Skua, and only to that species, not to the Long-tailed one. These three references are, as already mentioned, quoted in the first place, and are the more important because they are partly Linnæus's own—must have been so thoroughly understood by him—as they were made by a contemporary author about a well-known Swedish bird. When this is so it is perfectly evident that Linnæus, with his *Larus parasiticus*, meant the Common Skua, which he himself had seen,

* Only one instance of dimorphism being known about the Long-tailed Skua.

studied, and described, and not the Long-tailed Skua, which is not proved to be known to Linnæus, even if some of the *later quotations* in 'Systema Naturæ' should refer to that bird. Besides, and finally, it is almost an insult to the great author to assume that he should have made such a mistake as to name a non-parasitic bird such as the Long-tailed Skua *parasiticus*, when the matter lay within the limits of his own personal experience, as this apparently did.

The name of the Common Skua must therefore stand as *Stercorarius parasiticus* (L.).

It remains now to find out which name for the Long-tailed Skua has priority. Reichenow has recently* for this bird (at the same time as he, unlike the author of 'Cat. Birds, British Museum,' vol. xxv., correctly accepts the specific name *parasiticus*, L., for the common species) readopted the specific name " *Stercorarius cepphus* (Brünn.), 1764." I suppose that Reichenow in this refers to the bird described by Brünnich in his 'Ornithologia Borealis' (Hafniæ, 1764) under the name *Catharracta cepphus*. But the whole description of this bird makes it clear that Brünnich had before him not a Long-tailed Skua, but a young specimen of the Common Skua. To prove this the following quotation from the diagnosis need only to be made:—

"Capite colloque luteis fusco longitudinaliter *maculatis*; reliquum corpus ex luteo fuscoque *undulatum*, abdomine pallidiore, macula alari alba, *cauda subæquali*," which is still further elucidated by the full description in the same style. It is just as clear that Brünnich's figure, although badly made, does not represent a Long-tailed Skua.†

Catarractus parasita Pallas (Zoogr. Rosso-As. t. ii. pp. 310-11) seems to refer to the Common Skua rather than to the Long-tailed Skua,‡ to judge from the measurements of the tail-feathers, and from the statements: "Alæ . . . composite medias rectrices fere æquantes." . . . "Remiges . . . primariae rhachibus albis," as well as from the references and quotations.

* 'Die Kennzeichen der Vogel Deutschlands,' Neudamm, 1902.

† Brünnich's names *parasitica* and *coprotheres* represent, of course, respectively the light and dark forms of the adult bird *S. parasiticus* (L.).

‡ As is indicated in 'Cat. Birds, British Museum.'

But already (1760) Brisson mentions, in his 'Ornithologia' (t. vi. p. 155), under the name *Stercorarius longicaudus*, a Skua which is said to have its "cauda trédecim pollices longa"; and there can be no doubt that this refers to the Long-tailed Skua, even if the following synonyms (among which *Larus parasiticus*, Linn.) are incorrect. *Longicaudus* must therefore stand as the specific name of the Long-tailed Skua, and it seems quite suitable.

AN UNKNOWN WARBLER IN OXFORDSHIRE.

By W. WARDE FOWLER, M.A.

I FEEL that it is incumbent on me to put on record my experience this summer of a bird which I have been entirely unable to identify, even with the help of several persevering young friends, who did all they could to find the nest, and to note the appearance and song. I was unluckily unable to bring any ornithologist of larger knowledge than my own to bear upon the problem ; Mr. Howard Saunders was unable to come, and Mr. O. V. Aplin was away from his home in the county. But I cannot help thinking that, without shooting the bird, they would hardly have got further than I did ; and, as there was barely a doubt that the bird was breeding, I would not myself take the responsibility of destroying it.

All ornithologists know how difficult, and even impossible, it is to identify our little Warblers with the aid even of strong binoculars, unless we hear them sing, or track them to nest and eggs. Especially is this the case with the tree-haunting Warblers when the foliage is once fully out, and the bird of which I write, with all the restless habits of a *Phylloscopus*, did not appear until the second week in May, and then moved about continually in the higher branches, so that, as a rule, we only saw it from below, and in doubtful lights. But for its voice it would never have attracted attention ; but that voice was so striking, and so unique in all my experience in this country or the Continent, that even when I sent a friend with instructions as to where to hear it, being unable to accompany him myself, he recognized it the moment he came within its range. I myself became so thoroughly familiar with it that I should recognize it instantly anywhere on the globe, and I can recall it in imagination with perfect precision, though I cannot attempt to put it down on paper, or in musical notation, any more than I could the song of the Wood-Wren or the Grasshopper-Warbler. It is a sweet,

continuous, liquid gurgle, interrupted here and there by notes—usually three in number—of a more distinctly musical type, which have a certain mellow yet reedy tone, not unlike some of the notes of the Redstart; but these are only given occasionally in the song, which was often continued for half a minute or so, and can only be compared to the noise made by letting a thin thread of water fall somewhat irregularly into a basin with water in it; or it may be imitated by blowing gently, but with varying force, through an egg-blower into a tumbler of water. Thus it has a distant resemblance to the voice of the Grasshopper-Warbler, to that of the Wood-Wren, and also to that of Bonelli's Warbler, and, when I was first on my way to hear it, I had no moral doubt that it would turn out to be one or other of the first two of these, though I nourished a secret hope that it might be Bonelli, a bird well known to me, and one which I have always half expected to hear of in England some day; but no sooner did I have a chance of listening to the song than I was forced to give up all such expectations, and confess myself completely beaten.

It was on June 10th of last year that I was first taken to the spot by Mr. W. S. Medlicott, of Magdalen College, who told me that he had made acquaintance with the bird the year before (1901), and had searched carefully for a nest without success. The wood is very secluded, and I have never seen anyone there except a friendly keeper; the haunt of the bird is the southern edge of the wood, and is limited to a space of about a hundred yards square, within which limits it moves about continually, seldom staying long in any one tree. Perhaps the favourite spot was where a little cowpond at the very edge of the wood was overshadowed by a young oak and some smaller bushes growing out of a thick undergrowth; but it would sometimes retreat some way into the wood itself, which was composed of oaks, elms, ashes, and a few firs, none of them of any great size, with small open grassy spots, admirably suited for ground-building birds.

On June 10th I heard hardly anything of the song; it was the afternoon, when even the most persistent of singers are apt to be silent. I came again alone a week later, and heard enough to make it quite clear to myself that I had never yet come across this singer, but I could not get a good sight of it, and I had to

leave Oxford a day or two later. This year (1903) I heard from Mr. Medlicott, who was not in residence at Oxford, that a friend had reported the bird as returned for the third time, and the next day I spent two hours alone listening and watching, but had to leave the wood entirely mystified. On June 4th I took two young friends with me to look for a nest. In this we failed, as usual, but we learnt a good deal more about the bird; for example, that it shivers its tail slightly when singing, but apparently not its wings, as the Wood-Wren does; that it eats green caterpillars; that it is the size of the Wood-Wren, or rather larger and stouter; and that it has a white throat and a dull white or buffish white breast, the back being, so far as we could see, rather a rufous brown. On the whole, it was rather more like a Garden-Warbler, as seen from below, than a *Phylloscopus*; but its movements were more like those of the Wood-Wren than any other bird. Yet assuredly its song had absolutely nothing in common with that of the Garden-Warbler, and only the most distant resemblance to that of the Wood-Wren. I may say that during our many visits to the wood we never heard the song of the Wood-Wren, nor its peculiar musical call.

On June 17th I went again to look at a nest which had been found by one of my helpful young friends; it was apparently that of a Willow-Wren, but was curiously large and conspicuous, composed chiefly of moss, and lined with Partridge feathers; it contained one egg, of a pinkish white ground colour, with pale red spots all over it. We spent much time on this occasion and afterwards in watching this nest, and the birds belonging to it, but were never able to connect either it or them with the bird we were trying to identify. It was probably the nest of a Willow-Wren. Mr. Aplin, to whom I afterwards showed one of the eggs, did not feel confident about it, and was inclined to lend an ear to my suggestion that it might be *Phylloscopus borealis*; but, as far as I can discover from books, no nest of that species has yet been found with a lining of feathers. As far as the evidence of the nest and eggs is concerned, I cannot attach any weight to it, and, in spite of the most diligent search, we never came upon another that could be in any way connected with our bird.

I spent a long time in the wood on June 24th, and again on the 30th with my friend Mr. H. G. Maurice—still unable to come

to any conclusion, but getting thoroughly familiar with the bird and its ways. A day or two later Mr. Maurice, who was staying in Oxford, bicycled out to the wood at daybreak, and stayed there a long time. He made careful notes on the spot, which he has kindly placed at my disposal. I had myself become disabled by rheumatism and neuritis, the result probably of spending too much time in a damp wood in a very wet season. The general result of Mr. Maurice's observations was to disconnect the bird with the nest we had found, and to suggest another spot as likely; but it was part of our bad luck in the whole business that he too was unwell after a slight sunstroke, and was unable to search as carefully as he wished. His notes made on July 2nd are, however, very interesting, as showing the food and appearance of the bird, and I will quote the most important part of them:—

"I reached the spot about 4.15 a.m., and left it about 6.30 a.m. The bird sang the whole time without interruption. (This is remarkable for so late a date.) At first it was in the trees so much frequented on the occasion of my last three visits, and, though it made brief excursions to other parts, it always returned to this neighbourhood. I beat out the part where I thought I saw the hen last evening, but without result. I had several good looks at the bird, and saw him kill two caterpillars in the manner I observed yesterday (*i. e.* by knocking them against a branch). On the second occasion he was very close to the supposed nest. The caterpillar was a very long and large one, and very light in colour. The process must have lasted certainly one minute, probably a good two minutes. He paused several times, and appeared to try to eat the caterpillar, but found it necessary to resume the threshing process, presumably because the caterpillar curled up and obstructed him. While threshing it, he held the caterpillar by one end, so as to swing it full length. Twice in the course of the battle he paused and sang a short snatch of song, with the caterpillar still in his bill, though, as a rule, he opens his mouth wide in singing. At length, whether by accident or design I cannot say, he dropped the caterpillar. He followed it at once, returned with it to a low branch, and devoured it in the twinkling of an eye. He then sang, and retired singing to his favourite haunt, not appearing to take any interest in our nest, which now contains two young birds."

"My general idea of the bird's colour and shape is much clearer now. I do not believe that with a clear view one could take him for a Chiffchaff or a Willow-Wren. He seems a larger and stouter bird. The general colour of the upper parts is decidedly dark; head dark brown right down to the throat, and I could detect no sign of an eye-streak. The under parts lighter, but suffused with a very decided grey. The general appearance of the bird was to me much more suggestive of the Garden-Warbler than any other bird I know."

"Once, while very near the spot where I thought the nest would be, he descended with a curious fluttering flight, like a falling leaf, into some low elder bushes, but did not remain there long. He returned to them once or twice in the course of the morning, but again did not remain there long. His movements are generally abrupt. The wings as well as the tail quiver while he sings, though less noticeably; the head is thrown back, and turns slightly from side to side, and the mouth is very wide open."

This last observation of Mr. Maurice's, that the head is turned slightly from side to side, is interesting when taken in connection with the song, which is, or seems to be, always gently rising and falling, and does not remain on the same musical plane, if I may use the expression. Probably the effect is produced, as in the case of the Grasshopper-Warbler, by these motions of the head. All that he says of the appearance of the bird coincides closely with the observations of Mr. Medlicott, myself, and others. Last year, when I had but a slight acquaintance with the song, I was inclined to think that this was an eccentric Garden-Warbler, and I thought on one occasion that I heard in the song of that species—or, rather, of a single individual of it—some sibilant notes faintly reminding me of our mysterious bird. This year, however, I have been obliged to abandon this idea; and in any case it would be a most extraordinary circumstance if a Garden-Warbler were to develop a song so entirely different from that of its species in all its main characteristics, and so unique among all British birds. Again, were the bird a Garden-Warbler, why did we fail to find a nest of that species, after moving about so often in the haunt of the bird, and examining every nest in every stage of existence?

Both Wood-Wren and Willow-Wren must be considered out of the question also, if we are to apply to them any of the ordinary tests of identification. Of the latter species there were several close at hand singing their familiar song. As I said at the beginning of this paper, I have never heard anything like the song of this mysterious creature either in England or the Continent. I have searched Dresser's 'Birds of Europe,' and many other works, for some account of a small bird's song which might at all resemble ours ; but among the numerous tribes of Warblers I can find none, unless it be *Phylloscopus borealis*, and I cannot honestly say that any description I have read, of the song, or the plumage of that species gives me much encouragement. I am still quite in the dark about the bird which gave me so much interesting employment last June, and must postpone further investigation till June of next year, in hopes that a bird which has already spent three seasons in one particular spot may return for a fourth. Meanwhile, it is possible that some readers of 'The Zoologist,' who have a larger acquaintance than I have with foreign birds and their songs, may be able to contribute some suggestion towards the solution of the problem.

NOTES AND QUERIES.

MAMMALIA.

Natterer's Bat (*Myotis nattereri*) in Bedfordshire.—During a visit of a few days last year to the village of Turvey, Bedfordshire, I noticed during the evenings several Bats frequenting the garden of the Crown Farm, where I was then staying. Their light-coloured under parts first attracted my attention as to their species, but it was not until Aug. 3rd of the present year that I was able to procure a specimen, which I obtained from a hole in a plum tree (an unusual sleeping haunt, I believe, with this species) near at hand, and so confirmed this new record for that county.—J. STEELE-ELLIOTT (The Manor House, Dowles, Worcestershire).

Natterer's Bat in Oxfordshire.—A Natterer's Bat flew in at one of the windows of this house on the night of June 26th, after a hot day. It does not seem to be very uncommon in this county. The last I had was found by some workmen who were repairing the roof (of "Stonesfield slate") of an old house in the village, in April, 1902. A Long-eared Bat was caught at the same time. Messrs. J. G. Millais and H. Noble found Natterer's Bat in company with Daubenton's, the Long-eared, and (one) Bechstein's Bat in a chalk cave near Henley-on-Thames (but in Berkshire) in March, 1901 (P.Z.S. 1901, p. 216). For other Oxfordshire occurrences, cf. 'Zoologist,' 1889, pp. 808 and 881.—O. V. APLIN (Bloxham, Oxon).

Natterer's Bat in Surrey.—In July, 1902, I caught a specimen of Natterer's Bat (*Myotis nattereri*) in the room of a house at Milford, Surrey. This may be worth recording, as I believe this species is somewhat local. I ought to have recorded it before, but forgot until the other day, when I came across the skin.—GORDON DALGLIESH (Clairval, Colling's Road, Guernsey).

AVES.

Dartford Warbler in Shropshire.—The occurrence of *Sylvia undata* in this part of England has not hitherto been authenticated, though recorded on slender evidence in Staffordshire. In the autumn of 1902

Mr. J. S. Lang, of Ludlow, noticed a pair of birds in a gorsy bit of country near that town, which he suspected were Dartford Warblers. He found them again in May this year, and they were then very tame, often allowing themselves to be observed at close quarters, enabling him to establish their identity beyond doubt. The male might frequently be seen perched on the topmost spray of a gorse bush. Mr. Lang found there were two pairs in the locality, and subsequently one of the nests was discovered by Mr. J. Palmer, who has eggs. I may add, on the authority of the last-named gentleman, that three pairs of Hobbies again bred near Ludlow this season.—H. E. FORREST (Shrewsbury).

Nesting Habits of Long-tailed Tit (*Acredula caudata*).—It does not seem to be generally known that, during incubation at least, both the male and female frequently, if not always, occupy the nest at night together.—J. STEELE-ELLIOTT (The Manor House, Dowles, Worcestershire).

Cirl-Bunting in Flintshire.—On July 29th last, when in company with Mr. T. A. Coward, a male of this species (*Emberiza cirlus*) was seen and heard singing by us at Tremeirchion. This is, I believe, the first record of this bird in Flintshire. It is probable, however, that it occurs in several localities in this county, and also in many places not hitherto recorded in most, if not all, of the counties of North and South Wales. It is undoubtedly overlooked in many instances, notwithstanding its many distinctive characteristics, irrespective of plumage, which distinguishes it from the ubiquitous Yellowhammer.—S. G. CUMMINGS (King's Buildings, Chester).

Nesting of the Grey Crow in Suffolk.—This year a pair of Grey Crows (*Corvus cornix*) have nested and reared a brood of young ones at Gunton Old Hall, near Lowestoft, and my informant, E. W. Fowler, Esq., who resides there, writes me as follows:—"I saw five Grey Crows here for some days between the 1st and 15th of June; two appeared to be old ones and three young, and I believe they nested in the wood with the Rooks. The young ones were poor flyers, and I had to tap the tree they were on with my stick to move them, and then they only flew a short distance. I saw one of them as late as the middle of August. Two or three years ago I saw an old Grey Crow here in July."—E. A. BUTLER (Plumton House, Bury St. Edmunds, Suffolk).

Late Occurrence of Swift and Cuckoo in Scotland.—*Cypselus apus* has stayed with us later than usual this year. I saw several flying

about over the city of Edinburgh, and uttering their scream, as is their custom, on the evening of August 28th last. In former years, and much farther south—Kirkcudbrightshire—I found the 20th August a late date for their stay. On this date, in 1894, I saw a group of them on their southward migration. It is true I have also seen a solitary straggler in the first days of September, but this is of course abnormal. When on a holiday in the early summer of this year I heard the Cuckoo's call—practically unbroken—on the opening morning of July. I do not know whether this is in the nature of a record or not, but I never have heard it after the month of June in former years. A certain well-known writer of fiction (Sir Conan Doyle, in 'Rodney Stone') would lead his readers to think that it calls in September. I have not heard it so late myself!—J. W. PAYNE (1, Meadow Place, Edinburgh).

The Hobby in South Warwickshire.—A friend of mine in South Warwickshire, not far over the Oxfordshire border, sent me a fine adult Hobby (*Falco subbuteo*) in the flesh on August 15th last, and wrote:—"The keeper shot this in the wood; they build in fir-trees near the pond; there are more there now." Doubtless this remark refers to the other old bird and the young ones reared this year. The bird sent proved to be a female, and measured 18·2 in. in total length; wing, 10·25 in. Legs and feet bright golden- or deep chrome-yellow. Claws blackish horn. Bill horn-colour, paler and greenish at the base of the upper mandible. Cere greenish yellow. Eyelids yellow. The stomach contained fragments of small beetles.—O. V. APLIN (Bloxham, Oxon).

Albino Moorhens.—Pure albinism is, I believe, very rare in the Moorhen (*Gallinula chloropus*); the only departures from the normal with which I have hitherto met are pied varieties showing more or less white, and individuals the plumage of which presented a silky or hair-like appearance. Of the latter curious variety there are good descriptions in the 'Birds of Norfolk,' ii. p. 422, and by Mr. Gurney in the 'Transactions of the Norfolk and Norwich Naturalists' Society,' iii. p. 581 (with coloured figure). I was pleased therefore to have an opportunity of examining two fully-grown young ones in beautiful plumage in the shop of Mr. Lowne, of Great Yarmouth, to whom they were sent to be preserved by Mr. Walter J. Corbett, of Rollesby Hall, near that town. They were both females, and were killed at Rollesby about the 1st and 8th August last. The plumage in each case is pure white, the legs and bills pale chrome-yellow, and the irides pink,

as is usual in albinos; the other members of the same brood, Mr. Lowne was told, were of the normal colour.—THOMAS SOUTHWELL (Norwich).

A Spotless Curlew's Egg.—On the 19th of May last I found, in a nest placed in a tuft of rushes in a swamp, three eggs of *Numenius arquata*. All of them were normal in size and shape, and two were of the usual colour, having an olive ground and dark brown and grey blotches, while the third was of a clear bluish green and unspotted. In colour it resembled a Heron's egg. I think this variety must be very rare, and I should much like to know if any of your readers have ever met with one anything like it.—E. A. SWAINSON (Woodside, Brecon).

Breeding of Lesser Black-backed and Herring-Gulls.—Would Mr. Elms more clearly define what he means (*ante*, p. 808) by "Lesser Black-back Herring-Gull's nest, containing one egg of the former bird and two of the latter," and his subsequent observations in the next sentences? The difference between the eggs of the two species—darker and lighter, &c.—alone is not sufficient for purposes of identification.—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

[In answer to the above query of Mr. Harvie-Brown's—what I meant when making use of the expression "Lesser Black-back = Herring-Gull" was that there seemed a possibility, in this instance, of the nest being common to both species, or, in other words, that these two species were occupying the same nest, which contained one egg of the Lesser Black-backed Gull and two of the Herring-Gull. I quite agree that the colourings and markings of these two birds' eggs are insufficient for the purposes of proper identification, and with such slight evidence as this I would not say that it was by any means an established fact that these two Gulls frequently occupy the same nest. Such a thing may at times happen, and on at least two occasions I met with a nest that tended to point towards such an occurrence. I believe the full clutch of eggs, both for the Herring-Gull and the Lesser Black-backed Gull, is generally admitted to be three eggs, and all the nests I saw, save the one quoted above, contained two only. I trust this reply gives the information required.

I read the Rev. Holroyd Mills's letter (*ante*, p. 817) with much interest, and hasten to say that I did not see the Lesser Black-backed Gull and Herring-Gull "sitting side by side on one nest." I fear that the evidence is not sufficiently substantial to allow of its being a fact that these birds do habitually occupy a common nest; that birds do so from mischance—perhaps more often than we are aware—admits of no doubt, and Mr. Holroyd Mills furnishes us with an interesting

instance of the same thing with regard to a Mallard's nest containing one egg of the Red-breasted Merganser.—E. F. M. Elms.]

Sabine's Gull in Yorkshire.—Mr. Machin, the Bridlington bird-stuffer, tells me that on Sept. 1st an adult Sabine's Gull (*Xema sabini*) in winter plumage was brought in for his inspection. This bird appears now to be an annual visitant to the east coast.—JULIAN G. TUOK (8, The Crescent, Bridlington).

Ornithological Notes from Aberdeen for August, 1903.—General feature of this season is late nesting. Swallows (*Hirundo rustica*) with young in nest, Aug. 7th; still here, Aug. 31st. I am quite convinced of having seen two young Cuckoos (*Cuculus canorus*) on Aug. 7th, but did not see both at one time. They were newly fledged and chirping, as well as closely attended by the usual foster-parents. One seen again on Aug. 16th in normal plumage, which shows that this bird had been in a similar position this year to many others, but exhibiting more persistence in breeding than we would have credited it with a month ago. By keen observation the plumage was seen to incline to slate-colour. Curlew (*Numenius arquata*) last heard on Aug. 17th. Dunlins (*Tringa alpina*) have disappeared during the month. Yellow-hammer (*Emberiza citrinella*) hatched two young on Aug. 1st from two eggs. The young seemed to be doing well.—W. WILSON (Alford, Aberdeen, N.B.).

Notes from Bridlington, Yorkshire.—While spending the month of August at Bridlington, I had several opportunities of visiting the Rempton cliffs. The close-time for this district is now extended to Sept. 1st, which gives the birds a fair chance of taking away their young, as on the last day of August there was hardly a bird to be seen on the cliffs, with the exception of a few Guillemots in charge of young ones. Razorbills seem rather scarce, as in five visits to the cliffs I could not recognize one, though I have seen them on the water from a sailing-boat; but there were plenty of Puffins and Kittiwakes, and early in August multitudes of Guillemots. Sandwich Terns appeared in the bay here about mid-August, no doubt some of the Farne Island birds on migration, and other birds I have noticed were a fine old Gannet, several Cormorants, a few Scoters, all the six species of Gull which breed in Great Britain, Kestrels, Carrion-Crows, and Rock-Doves. The Doves are a very mixed lot, some of them almost white. The Gulls here are very tame and amusing, coming quite close to the piers and the spa, and a flock may nearly always be seen at the outlet of one of the sewers, where they will allow a boat to be rowed nearly

up to them. There seems still to be a demand for sea-birds in some milliners' shops, as the following advertisement from an address in Essex recently appeared several times in a Yorkshire daily paper : "Wanted, small sea-birds ; 1000 skins immediately ; cash"; but the extension of the close-time will be the means of saving hundreds of Terns, though it is to be feared that a good many were slaughtered on this coast early in September, as some gunners were "out on the First" by daybreak. Both in East and West Suffolk some birds are protected by the County Councils all the year through, and a similar order forbidding the killing of "Terns or Sea-Swallows of all species" and Kittiwakes on the Yorkshire coast would be an excellent thing, as readers of this Journal would have thought, had they seen the proceedings of two men in a rowing-boat near this town. I must admit that nothing would have given me greater satisfaction than to have heard that one of them had shot the other, a state of things which seemed quite possible.—JULIAN G. TUCK (8, The Crescent, Bridlington).

PISCES.

Megrim and some other Fishes at Yarmouth.—On July 28th I received from a fish-hawker a small flat-fish, which I identified as the Megrim (*Arnoglossus laterna*) ; it measured 4 in. in length. This is, as far as I can ascertain, the first example of Megrim brought into Yarmouth—at any rate, recognized. A great many fine Eels have lately been taken both by net and hook at the entrance of the harbour. An Eel was recently caught by a "pick," which, on being opened, was found to contain two lesser Eels almost half as long as itself. I observed a Common Gull (*Larus canus*) pick up a live 12-inch Eel and swallow it, but its squirmings, which could be distinctly seen, made the bird very uneasy, if not a bit frightened ; but it held on, and in about five minutes the squirmings had ceased. A large "grey" Gull adroitly captured a large Eel, upwards of a pound in weight, but was glad almost immediately to let it go again. Eels have been gorging themselves on Shore-crabs (*Carcinus mènas*). When caught they are usually full of them. One, however, lately taken, had several Sand-launces in its maw. On June 19th I obtained a Lemon Sole (*Soles lascaris*), 8½ in. in length.—A. PATTERSON (Ibis House, Great Yarmouth).

[The Megrim is reported by Howse as taken on the Yorkshire coast, but rare. Sometimes brought into the Tyne by the trawlers ('Cat. Fishes, Rivers and Coast Northumb. and Durham and the adjacent Sea').—ED.]

ACARINA.

In 1871 I observed and drew the ventral surface of a water mite.* At the breeding season the ends of the third pair of legs in the male become inflated, and are kept in the genital orifice. When he embraces the female he inserts the germinal fluid with the third pair of legs, using them like chop-sticks. No doubt this has been noticed since, but I doubt if in any book, or even paper, on mites, or I must have heard of it. There is a mite here parasitic on a Honey-eater (*Prosthemadera novæ-zealandica*), which has, in the male, claspers to seize the female with. It is unlawful to shoot this bird, but sometimes one can. The mites come and drink at the bird's eyes.—W. F. HOWITT (75, Ingestre Street, Wellington, New Zealand).

* Probably one of the *Hydrachnidæ*.—ED.

NOTICES OF NEW BOOKS.

The Birds of Tennyson. By WATKIN WATKINS, B.A. Cantab.
R. H. Porter.

Was Tennyson an ornithologist? In the usual or strict sense of the term we may gladly say—no; had he really deserved that title he would probably not have been the great Victorian poet. That he was a lover of birds, and a good observer of them as he was of other natural creatures and objects, "goes without saying" to anyone who is really conversant with the Tennysonian literature. Mr. Watkins perhaps inclines to over-accentuate Tennyson's ornithological standpoint. There is the naturalistic poet and the poetic naturalist, but this is nearly all that can be said. It is reported that Karl Schimper, in a small piece of poetry, for the first time used the word *Eiszeit* (glacial epoch).

But is poetry expected to give us facts, or ideas? Is the poet to describe or to idealize a bird? We incline to the latter hypothesis. Of course a want of ordinary familiarity with birds may cause a point to be altogether missed, as with Milton and the *Sky-Lark*, in the well-known lines:—

"Then to come, in spite of sorrow,
And at my window bid good morrow."

On the other hand, some of the highest flights in true poesy have occurred in the idealization of animal life. In the great Semitic epic, described by Tennyson himself as "the greatest poem whether of ancient or modern times," *Jahveh*, in addressing Job, speaks of the war-horse in well-known pregnant lines, one of which has been rendered by Carlyle as "he laughs at the shaking of the spear," words which, certainly, can by no twist be made by any enthusiastic mammalogist to imply a knowledge of the *Equidae*. When we enjoy a beautiful sonnet, such as Eugene

Lee-Hamilton's "Sea-Shell Murmurs," is it necessary to ask whether the writer was acquainted with the Mollusca? Would any botanist adversely criticize those exquisite lines which have come to us from the ages, and will go down with them: "Consider the lilies of the field, how they grow; they toil not, neither do they spin"?

We prefer to make our standpoint clear in noticing this excellent and conscientious compilation of the bird-lore of Tennyson, which is a complete ornithological concordance to the works of the most read and best loved English poet. But the poet is always greater than his facts; the "Merman," "Mermaid," and "Talking Oak" are strictly outside the canons of biology, and so we may thankfully say is all poetry. It may seem irony for a zoologist to seek to defend poetry from the claims of his own science, but, though the poet ceases to be one when he is untrue to nature, he is still outside all the ologies.

The Norfolk Broads. By WILLIAM A. DURT and other Contributors. Methuen & Co.

BROADLAND is alike loved by the naturalist, angler, and boating tourist, though the increased visits of the last have proved anything but an unmixed pleasure to the first; the broads are rapidly becoming holiday resorts, and certain riparian owners have asserted their most unpopular rights and privileges. How a Thoreau would have enjoyed and described these glorious meres, whose fauna, alas! is not now what the old-time Broadland marshmen so well remember. Who can forget the birds, the plants, or the big Bream of these winter, perhaps, but now no longer summer, solitudes. No one book can exhaust the tale that the Broadland naturalist can unfold, and we have long wondered why some wealthy naturalist, associated with one of our mighty publishers, has not before this commenced to publish a large fully illustrated folio work on the fauna and flora of this region. It is worth doing, and the men are now living in Norfolk who could write it. It is no disparagement of Mr. Durt's excellent and beautifully illustrated volume to say this; it is, on the contrary, the perusal of this, the best book up to date

on the subject, that has re-awakened the craving for a work that would be beyond the means of the general public, and could only appear by the aid of wealth and interested subscribers. What Godman has done for Central America might well be imitated—a very much smaller undertaking—by some lover of Broad-land.

Mr. Dutt, in his volume, takes us through the rivers and broads, tells us what to see, and gives us much information and local lore which can only be gathered by personal experience. Some of the faunistic contributors are well known to the readers of 'The Zoologist.' Mr. A. Patterson writes on the "Wild Life of Breydon," a subject quite his own; the Rev. M. C. H. Bird deals with "Bird Life"; Claude Morley, with Entomology; H. E. Hurrell discusses "Pond Life"; and Botany is treated by the Rev. G. H. Harris. The angler and wildfowler are catered for by A. J. Rudd and Nicholas Everitt.

We are glad to find in this volume a few bionomial facts relative to the fishes of the Broads. It is strange how little we know on this subject. Among the multitude of anglers there seems scarcely an observation made, apart from the best time and way, to hook and land the prey. What is the reason why ornithologists and entomologists still bear the heat and burden of the observational day? while there is absolutely more bionomial information obtainable about our marine than our fresh-water fishes. Much information is acquired that is never garnered. The despised birdcatcher may relate a few of his observations to a mate in an alehouse, but his knowledge dies with him. Mr. Dutt remarks on the same waste with the broadsmen. "Their methods of gaining a livelihood made them close observers of the habits of fish, bird, and beast; the knowledge of natural history that was lost when an aged broadsman died would, if it had been printed, have made his name famous."

We heartily commend this book to all who can feel an interest in an unique aspect of our "rough island-story," and to those naturalists who love the details of a local fauna.

Fasciculi Malayenses : Anthropological and Zoological Results of an Expedition to Perak and the Siamese Malay States, 1901-1902, undertaken by NELSON ANNANDALE and HERBERT C. ROBINSON. Anthropology, Part I. University Press of Liverpool.

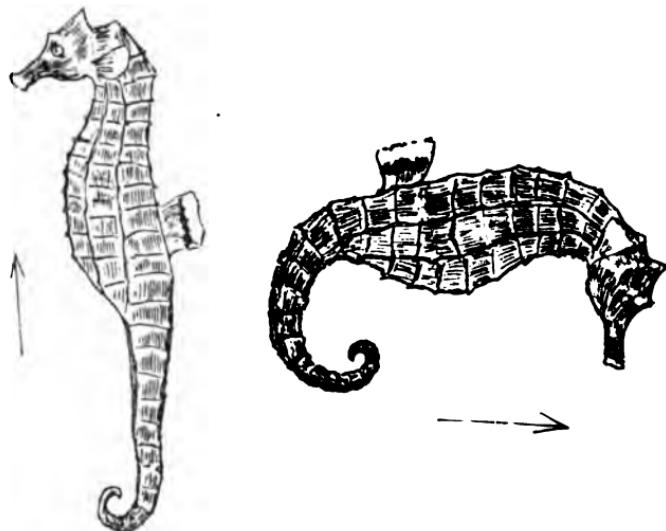
It was once well said that, thanks to the researches of a few eminent men, we have a far clearer knowledge of the primitive Aryans than we have of certain states of society actually existing at the moment in Africa and Asia. But this reproach to anthropological investigation is now being rapidly removed. We recently drew attention to a work on the Andamans and Nicobars, in which the veil was lifted from the mysterious race who inhabited the interior of the Great Nicobar. A similar service in this publication is done for the Semang and Sakai tribes which inhabit the Malay Peninsula. We do not say that Messrs. Annandale and Robinson are alone among modern writers on these people, but we can safely affirm that they have produced and will continue the publication of by far the fullest and most authentic account of them. It is remarkable how little was really known, anthropologically, concerning these tribes, and our ignorance was partly due to the few travellers who were interested in the investigation, and the then lack of scientific method in the few actual studies made. Thirty-five years ago, when the writer of this notice resided for two years in the Malay Peninsula, nothing but hearsay and tradition could be gleaned concerning the Semang and Sakai tribes; now we possess the first instalment of a really exhaustive memoir, beautifully illustrated, and conforming to the rigid requirements of anthropological research.

The Butterflies and Moths of Europe. By W. F. KIRBY,
F.L.S., &c. Cassell & Co., Ltd.

IN our last volume attention was drawn to the commencement of this publication, and we have now received part xxxii., concluding the work. Mr. Kirby, in 1882, published a similar work, in which all the species were described that were included in the catalogue of Staudinger and Wocke (1871); the present volume comprises descriptions of all the butterflies and larger moths

enumerated in the great catalogue of Palæarctic Lepidoptera published by Staudinger and Rebel in 1901. His older work has also been completely revised, and the few species found in Madeira and the Canary Islands, but not met with on the Continent of Europe, have also been included. Mr. Kirby has thus provided a most useful and beautifully illustrated work for continental tourists, and those who pass the winter in the Atlantic islands, and being written in our own language, and provided with so many excellent figures, is likely to prove a standard work on the subject for many years to come.

Although the book is intended to be a popular one, and not beyond the intellectual capacity of the ordinary reader, and is, as far as possible, free from scientific technicalities, it has still avoided the offence of being only composed for the "man in the street." The lepidopterist will find many references to descriptions of larvae which are little known or have been generally overlooked, for our author is a well-known entomological bibliophile, and is particularly at home in the literature of his subject, both in its modern and more ancient aspects.



Movement in vertical plane.
Tail slightly flexed.

Movement in horizontal plane.
Tail strongly flexed.



At rest on floor of tank. Body bent
into an S-shape.

CHARACTERISTIC ATTITUDES OF THE COMMON "SEA-HORSE" (*Hippocampus antiquorum*), FROM EXAMPLES IN THE AMSTERDAM AQUARIUM.

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THE ZOOLOGIST

No. 748.—*October, 1903.*

MIGRATION OF BIRDS IN N.E. LINCOLNSHIRE DURING THE AUTUMN OF 1902.

By G. H. CATON HAIGH.

THE cloudy and unsettled autumn of 1902 was on the whole favourable to migration. The prevailing winds were easterly or north-easterly, usually very light, and often accompanied with fine rain.

Birds came in steadily and evenly throughout the autumn, and nothing approaching a "rush" took place. The periods at which the most important movements occurred were Sept. 8th to 11th, 20th to 24th, and especially Oct. 6th to 11th; while there was an exceedingly large immigration of wildfowl into the Humber on Nov. 30th and Dec. 1st, and immense numbers of Wood-Pigeons came in during the last fortnight of the year. Waders of all sorts, except Curlews and Peewits, were extremely scarce.

As is usually the case in a season in which easterly winds prevail, several of our rarer birds appeared—for example, the Black Redstart, Barred Warbler, Shore-Lark, White-tailed Eagle, Honey-Buzzard, Bittern, Great Bustard, and Spotted Redshank.

On the other hand, a few birds which one expects to meet with annually were either absent or very scarce, such as the Garden-Warbler, Grey Shrike, Goldfinch, and Long-eared Owl.

Turdus viscivorus. Mistle-Thrush.—A large flock in a turnip-field near the coast at North Cotes on Sept. 1st. This species was very abundant in the coast districts throughout the autumn.

T. musicus. Song-Thrush.—A good many Thrushes in turnips near the coast on Sept. 1st. Large numbers again present on 12th and 19th, and especially from Sept. 30th to Oct. 8th.

T. iliacus. Redwing.—This was a great Redwing year. One or two appeared on Oct. 9th, a few more on the 10th, and from that date till Nov. 10th the species steadily increased, the largest arrivals taking place on Oct. 11th, 16th, and 24th.

T. pilaris. Fieldfare.—The Fieldfare was somewhat late in its appearance. I saw three or four at Brigsley on Nov. 7th, and about a dozen on the coast on 15th. On Dec. 4th, with a light fall of snow, a few were passing north over Grainsby, and they were very abundant in the hedges near the coast. On Dec. 23rd a few were coming in from the sea, and I saw a flock of quite a thousand assembled on a piece of grass-land known as North Cotes "100 acre."

T. merula. Blackbird.—The first arrival of Blackbirds took place on Sept. 20th, and a larger number, consisting mostly of young cocks, came in on the 22nd. A further immigration took place on Oct. 6th to 9th, those coming in on the first-named day being principally young cocks, with a few old cocks; while on the following day old and young birds of both sexes were present. On Oct. 24th and 25th Blackbirds were again abundant on the coast, almost all being old birds. The last noticeable passage occurred on Nov. 15th.

T. torquatus. Ring-Ouzel.—Very scarce; I saw two in hedges near the sea at North Cotes on Oct. 6th.

Saxicola oenanthe. Wheatear.—A few Wheatears appeared on the sea-bank on Aug. 8th. On 30th I saw a flock of about a dozen perching on the sea-bank and on an adjoining hedge. Wheatears were again fairly numerous on Sept. 18th.

Pratincola rubetra. Whinchat.—A few in the vicinity of the coast on Sept. 1st. I noted single birds on 11th, 22nd, and 24th.

P. rubicola. Stonechat.—A single Stonechat—the only one

seen during the autumn—in a hedge near the sea at Marsh-chapel on Sept. 24th.

Ruticilla phoenicurus. Redstart.—The first Redstart appeared on Sept. 2nd, and from that date to Oct. 11th the species was always present in the vicinity of the coast in small numbers, except on Sept. 8th, when it was fairly numerous.

R. titys. Black Redstart.—On Oct. 10th I shot a bird of this species from the roof of a brick shed near the sea-bank at North Cotes. It was a young bird in the uniform dark grey plumage. I saw a few Common Redstarts on the same day.

Erithacus rubecula. Redbreast.—The first Robins arrived on the coast on Sept. 20th and 22nd, but the principal movement occurred from Oct. 6th to 11th, when they were extremely abundant. They remained, but in decreasing numbers, up to the 18th, after which few were seen.

Sylvia cinerea. Whitethroat.—The passage of this species commenced on Aug. 30th, and continued until Sept. 11th, being most pronounced about the latter date. A very few individuals remained to Sept. 20th, and I saw a single straggler on Oct. 8th.

S. curruca. Lesser Whitethroat.—A few individuals of this species appeared on the coast as early as Aug. 15th, and occasional examples continued to come in up to Oct. 8th, but I never saw more than one or two in a day.

S. atricapilla. Blackcap.—I shot a young male of this species close to the sea-bank at North Cotes on Oct. 11th. The only example seen during the autumn.

S. nisoria. Barred Warbler.—On Sept. 20th I shot a young female of this Warbler at North Cotes. A light easterly wind had been blowing for about twenty-four hours, with fine weather. Many small birds were present on the coast, including numerous Pied Flycatchers. This is the third Lincolnshire example.

Regulus cristatus. Goldcrest.—A good many Goldcrests arrived on the coast on Oct. 6th, and a few were present until the 11th, but the passage was much shorter, and the birds scarcer than usual.

Phylloscopus rufus. Chiffchaff.—A single bird shot in a thorn-bush close to the North Cotes sea-bank on Oct. 6th was the only Chiffchaff seen during the autumn.

P. trochilus. Willow-Wren.—Willow-Wrens were present on the coast in small numbers from Aug. 25th to Sept. 19th, and subsequently two immature birds appeared on Oct. 6th.

Acrocephalus sp. ?—On Sept. 20th I shot a Warbler in a hedge at North Cotes which exactly resembled a Reed-Warbler, except that the legs and feet were bright bluish green, inclining to yellowish green at the joints and soles of the feet. The hedge was a considerable distance from any reed-bed.

Accentor modularis. Hedge-Sparrow.—Hedge-Sparrows appeared on the coast in great numbers on Sept. 19th, 20th, and 22nd.

Parus major. Great Titmouse.—A single bird on the coast at Tetney on Oct. 11th.

P. cœruleus. Blue Titmouse.—Much scarcer than usual. A few arrived on Sept. 8th and 10th, a good many on 20th, and again a few on Oct. 8th.

Troglodytes parvulus. Wren.—A good many Wrens arrived on the coast on Oct. 8th, and a few on 11th.

Motacilla lugubris. Pied Wagtail.—Dozens of Wagtails in the vicinity of the coast at Tetney on Sept. 12th, and again on Oct. 8th.

M. raii. Yellow Wagtail.—Many in the vicinity of the coast on Aug. 8th. On Sept. 1st a few more appeared, and on 5th scores of these Wagtails were present on the banks of the Tetney drains and creeks, but by the 8th most of them had departed.

Anthus pratensis. Meadow-Pipit.—Very large numbers of these birds were present on the coast on Aug. 25th and Sept. 5th and 12th, frequenting principally the sea-bank and "fitties."

A. obscurus. Rock-Pipit.—First arrived on Oct. 6th, and was quite abundant on 11th.

Muscicapa atricapilla. Pied Flycatcher.—The heaviest migration of Pied Flycatchers that I have ever witnessed took place during September, in two separate "rushes," which were at their height on 10th and 22nd respectively. The first bird appeared on Aug. 30th, and a few were always to be seen up to the 10th and 11th of September, when they were very abundant. On the 12th, however, all had departed, and until the 22nd I only saw occasional single birds, but on that day they were present in quite unusual numbers. They remained a very short time, as

on 24th I only saw three, and no more appeared during the autumn.

Hirundo rustica. Swallow.—On Sept. 2nd I noticed Swallows coming in from the sea from N.E., many of them alighting on the mud. Last Swallows were seen on Oct. 27th.

Ligurinus chloris. Greenfinch.—Large flocks of Greenfinches arrived on the coast on Oct. 6th, frequenting the reed-beds, hedges, and sea-bank.

Carduelis spinus. Siskin.—On Oct. 9th I shot a Siskin among the bushes of sea-buckthorn at Donna Nook.

Passer domesticus. House-Sparrow.—Very large flocks of Sparrows along the sea-bank at North Cotes and Marshchaple on Oct. 24th.

P. montanus. Tree-Sparrow.—One or two Tree-Sparrows on a hedge near Tetney Lock on Oct. 11th. On 24th I noticed a few among the flocks of House-Sparrows above mentioned, and on Nov. 15th a flock of about two hundred in a hedge near the sea at North Cotes.

Fringilla cælebs. Chaffinch.—Many in the vicinity of the coast on Oct. 24th, and again on Nov. 13th; as usual, all male birds.

F. montifringilla. Brambling.—I shot a female Brambling at North Cotes on Sept. 19th. On Oct. 8th I saw another, also a female, and on 10th they were very numerous in all the hedges and thorn-bushes near the sea, all, without exception, being hen birds.

Linota flavirostris. Twite. The first small flock arrived at North Cotes on Oct. 18th, and very large numbers followed on the 24th.

Emberiza citrinella. Yellowhammer.—Hundreds of Yellowhammers appeared on the coast on Sept. 24th, and again on Oct. 24th.

E. schoeniclus. Reed-Bunting.—A few—all or almost all—females on the coast on Oct. 6th, and a considerable number on 16th.

Plectrophenax nivalis. Snow-Bunting.—Very scarce throughout the winter. I shot a fine old cock at North Cotes on the unusually early date of Sept. 17th, and I saw a couple of young birds on Nov. 10th.

Sturnus vulgaris. Starling.—By the 8th of August, Starlings were already very abundant near the coast and on the "fitties," and they continued to increase throughout the autumn, although I never saw them actually on passage.

Corvus monedula. Jackdaw.—A few Jackdaws were present among the large flocks of Rooks, passing west over Grainsby on Oct. 23rd.

C. corone. Carrion-Crow.—A few Crows on the coast on Oct. 6th were apparently coming in from the sea, and on the 24th I again noticed a good many on the shore and adjoining fields. Later on in the winter Carrion-Crows swarmed in the woods at roosting-time, and I frequently saw from one hundred to nearly one thousand in a flock outside some favourite covert.

C. cornix. Grey Crow.—I saw the first Grey Crow at Tetney on Sept. 30th, and three more passing N.W. on Oct. 8th, but the principal movement occurred on 24th, when these birds were passing inland to N.W. all day.

C. frugilegus. Rook.—A few straggling parties of Rooks passing inland to S.W. from midday till about 2 o'clock on Oct. 8th. On Oct. 20th a few going W. On Oct. 23rd and 24th large numbers also going W., on the latter day in continuous flocks until about 2.30 o'clock. On Nov. 13th many on the sands and fields near the sea; also flocks passing inland to S. till 2 o'clock.

Alauda arvensis. Sky-Lark.—The principal immigration took place from Oct. 6th to 10th, and a further movement occurred on 24th.

Otocorys alpestris. Shore-Lark.—On Oct. 8th I shot four Shore-Larks on the sands at North Cotes. All proved to be males.

Cypselus apus. Swift.—Swifts began to grow scarce about the middle of August. I saw two or three at Tetney Lock on Aug. 25th, and a single bird on Sept. 1st.

Alcedo ispida. Kingfisher.—I saw the first Kingfisher on Aug. 14th at Grainsby. On Sept. 2nd one on the coast at Saltfleet. Several at North Cotes and Tetney on Sept. 20th and Oct. 6th.

Asio accipitrinus. Short-eared Owl.—I flushed one of these Owls from the bottom of a ditch near the sea at North Cotes on Nov. 22nd.

Circus cyaneus. Hen-Harrier.—On Oct. 10th I saw two large Hawks, probably of this species, come in from the sea and pass away to S.

Haliaëtus albicilla. White-tailed Eagle.—An immature example of this species, which I saw at the shop of Mr. H. Kew, of Louth, was shot by a farmer at North Somercotes on Oct. 10th.

Accipiter nisus. Sparrow-Hawk.—A good many Sparrow-Hawks appeared in the vicinity of the coast on Nov. 10th and 15th.

Pernis apivorus. Honey-Buzzard.—A Honey-Buzzard, which I saw at Mr. Kew's shop, was shot by a coastguard at Donna Nook on Sept. 29th.

Falco æsalon. Merlin.—I saw a Merlin perched on an old hamper on the sands at North Cotes on Nov. 22nd.

F. tinnunculus. Kestrel.—Several Kestrels in the coast marshes on Nov. 15th, but this species has been scarcer than usual throughout the autumn.

Botaurus stellaris. Bittern.—A Bittern was shot at Tetney by one of the wildfowlers on Jan. 15th, 1903. I also heard of the occurrence of several other specimens in different parts of the county about this time.

Anser segetum. Bean-Goose.—A Bean-Goose was shot by a North Cotes wildfowler on Dec. 27th. It was alone when shot, and weighed 5½ lb.

A. brachyrhynchus. Pink-footed Goose.—This was a great Wild Goose year. I saw the first flock—eighteen in number—on Sept. 13th, flying low along North Cotes sands. On Oct. 4th a flock of nearly two hundred Geese passed over Thoresby, and many other flocks were seen during the month. In November and December they were scarce, and I only saw one small flock on 12th of the latter month; but in January and February, 1903, they were very abundant, and flocks often numbering several hundreds were frequently seen.

Tadorna cornuta. Sheld-Duck.—A flock of about twenty Sheld-Ducks seen at North Cotes were probably home-bred birds, but the species was numerous on the Humber throughout the winter.

Anas boscas. Mallard.—An immense immigration of Ducks into the Humber took place on Nov. 30th and Dec. 1st, and large

numbers were killed by fowlers on the coast. During January, 1903, very large flocks of Ducks came inland, frequenting the great fields on the wolds. Indeed, I have never seen so many in the district before.

Spatula clypeata. Shoveler.—I saw a few Shovelers at Tetney at the end of August, and the keepers say that at least one pair bred there.

Nettion crecca. Teal.—A few at Tetney on Aug. 8th, and a good many on 15th.

Mareca penelope. Wigeon.—First seen at Grainthorpe Haven on Sept. 8th. Some large flocks passed over Tetney Lock, going S.W., on Jan. 7th, 1903.

Ædemia nigra. Scoter.—Much scarcer than usual. I noticed some small flocks on the sea off Donna Nook on Sept. 17th.

Columba palumbus. Wood-Pigeon.—Several flocks going W. over Grainsby on Nov. 5th. From Dec. 17th to Jan. 1st large flocks of Pigeons were passing W. over Grainsby daily, sometimes from morning to night, and this great immigration was also noticed by the North Cotes wildfowlers. Most of these Pigeons passed inland, few remaining in the marsh district.

Turtur communis. Turtle-Dove.—Turtle-Doves were very numerous until the latter part of August, but nearly all had left by Sept. 1st, and the last were seen on 20th.

Rallus aquaticus. Water-Rail.—First seen on the coast on Nov. 10th.

Otis tarda. Great Bustard.—On Dec. 8th I saw, at the shop of Mr. F. Jeffreys, at Grainsby, a freshly-killed Bustard, which had been sent in from Weelsby. This bird was a female, but I could obtain no further information about it. On 29th a second Great Bustard—also a female—was shot by a wildfowler on Tetney cow-marsh. It measured 31 in. in length, and weighed $7\frac{1}{2}$ lb.

Charadrius pluvialis. Golden Plover.—A few appeared at North Cotes on Oct. 10th, and a large flock on Nov. 10th, but the species was somewhat scarce throughout the winter.

Squatarola helvetica. Grey Plover.—Very scarce. I did not see one until Sept. 8th, but a few appeared on Oct. 9th.

Vanellus vulgaris. Peewit.—A very heavy immigration took place during October, the principal movements being on 9th and

10th, and again from 20th to 24th, the direction of flight being S.E. to N.W. A further passage took place on Nov. 12th and 13th, the direction of flight being E. to W.

Hæmatopus ostralegus. Sea-Pie.—Several flocks appeared on Grainthorpe sands on Sept. 2nd.

Scolopax rusticula. Woodcock.—A very poor Woodcock season. The first bird was seen at Grainsby on Oct. 2nd. On 29th I shot one on the sea-bank, and the principal flight probably took place about this date.

Gallinago cœlestis. Snipe.—Extremely scarce throughout the whole season. I found a good many in the North Cotes drains on Dec. 11th.

G. gallinula. Jack-Snipe.—The first arrival took place on Oct. 6th, when I shot two couple near the coast at Tetney.

Tringa alpina. Dunlin.—A few small flocks appeared on North Cotes sands on Aug. 8th.

T. minuta. Little Stint.—I saw several small parties of Little Stints on Sept. 11th, and from that date until Oct. 6th a few of these small Waders were always present, frequenting fresh-water creeks near the coast.

T. subarquata. Curlew-Sandpiper.—On Sept. 2nd I shot an adult still retaining a good deal of the summer plumage from a small flock near Grainsby Haven. On Oct. 9th I saw a single bird on the side of Saltfleet Haven.

T. canutus. Knot.—On Sept. 2nd I noticed a few small flocks on North Cotes sands, but the first really large arrival took place on Nov. 13th, when some immense flocks appeared.

Calidris arenaria. Sanderling.—Very scarce; a few on the sands between Saltfleet and Grainsby on Sept. 2nd, and a good many at North Cotes on the 13th.

Machetes pugnax. Ruff.—I saw the first Ruff on Aug. 8th, and from that date throughout August and September I saw single birds or small parties not unfrequently. Lastly, a single Reeve at Tetney on Oct. 25th.

Totanus hypoleucus. Common Sandpiper.—A couple on Tetney Haven on Aug. 8th. Very abundant on 25th, and last seen on Sept. 20th.

T. ochropus. Green Sandpiper.—Very numerous throughout August, frequenting fresh-water creeks and drains near the coast, and many of the brooks inland.

T. calidris. Redshank.—Redshanks were abundant on Tetney fitties on Aug. 8th, but no doubt many of these were local birds. A considerable increase, however, took place on Sept. 8th.

T. fuscus. Spotted Redshank.—I saw a couple of these birds on Tetney Haven on Aug. 25th.

T. canescens. Greenshank.—Greenshanks were late in their appearance. I heard the calls of some passing over Grainsby at a great height on the afternoon of Aug. 26th, but could not see the birds. I saw one on the coast on 30th.

Limosa lapponica. Bar-tailed Godwit.—Scarce; I saw the first on Sept. 3rd, a few on 8th, and a good many on 17th.

Numenius arquata. Curlew.—Two or three Curlews on the coast on Aug. 8th. They were fairly numerous throughout the winter.

N. phaeopus. Whimbrel.—Very scarce; I saw the first on Aug. 8th.

Sterna fluvialis. Common Tern.—A few of these Terns off Donna Nook on Sept. 2nd, amongst the much larger flocks of the next species. On Sept. 17th a great number of Terns appeared on the coast, and, though the majority were Arctic Terns, many belonged to this species.

S. macrura. Arctic Tern.—As usual, Arctic Terns were abundant during the autumn, particularly on Sept. 2nd and 17th.

Stercorarius pomatorhinus. Pomatorhine Skua.—Several of these Skuas, with a good many of the commoner *S. crepidatus*, flying about over the "fitties" and adjacent land at Tetney and North Cotes on Sept. 12th—a stormy day, with heavy squalls from the north. I also saw a single bird off Donna Nook on Sept. 17th.

S. crepidatus. Arctic Skua.—A single young bird at Donna Nook on Sept. 2nd. A considerable number at Tetney and North Cotes on Sept. 12th, and both old and young birds were quite numerous all along the coast on 17th.

Podiceps cristatus. Great Crested Grebe.—I saw one of these Grebes at Donna Nook on Sept. 2nd. It was diving close in to the shore.

**FIELD NOTES (BEING A NATURALIST'S DIARY OF
OBSERVATION AND REFLECTION).**

BY EDMUND SELOUS.

1899.

(Concluded from p. 292.)

December 13th.—This morning, standing by a small willow-tree, my attention is attracted by a Hooded Crow, which, whilst flying, keeps uttering a series of very harsh, hoarse cries—"are-rr, are-rr, are-rr"—the intonation is much rougher and more unpleasant than that of Rooks. He does not fly right on, and so away, but keeps in approximately the same place, hovering about, and still continuing his clamour. I fancy I hear an answer to it from another Hooded Crow in the distance, and then, all at once, a number of Rooks fly up and join him—two small bands, I think, coming from opposite directions, and amalgamating, as they meet round him. I am not quite sure of this—they are there so all at once—but, anyhow, there must be from twenty to thirty Rooks who have come as at a recognized signal; and, having come, they all hover about in the air, over a space corresponding with a fair-sized meadow, the Crow making one of them, and still, at intervals, continuing to cry, the Rooks talking much less. Then, in some few minutes, all are gone, dispersed, again, over the country, nor do any go down where I can see them. What—if anything—is the meaning of this rendezvous? All I can imagine is that when the Rooks heard the repeated cries of the Hooded Crow, they imagined he had found something eatable, and therefore flew up to share in it. Seeing nothing, they hovered about, for a time, over a considerable space, on the look-out, and then gave it up and flew off. I can form no idea, however, of what it was that had excited the Crow, for excited he certainly seemed—it was a sudden burst of "are-ing." He did not go down anywhere, so that it can have had nothing to do with a

"find," and I feel sure, from the way he came up, and the place and distance at which he began to cry, that he had not seen me.

Quite a number of Moorhens are swimming in the little stream this afternoon, or feeding on the banks of it. One of the latter is very pugnacious. He runs at another from some distance with his head down and held straight in front of him, the beak almost touching the ground—like a bull—putting this other to flight—a swift, determined run made with the greatest resolution. Afterwards he swims across the stream into the reeds. Instantly there is a scuffle there; and then, pursued by him, another bird swims out, and almost immediately takes flight to the opposite bank. There is peace, now, for a time, but afterwards this same Moorhen, being again on the bank, makes his swift bull-like run first at one and then at another bird, driving them both away, one uttering a cry of distress. Again, a bird has been feeding, and is now walking off towards the stream. All at once, and *ex nihilo*, another one rushes swiftly after him from a considerable way off. The pursued bird takes to his wings, when the other does so too, keeping just at his tail, pursuing him very hotly and determinedly. It is always the same bellicose bird, I think, but cannot be quite sure. Moorhens are pugnacious, therefore, even in winter. Timid and wary they are, too, like other birds, the last perhaps in a higher degree, and, as with other birds, it is difficult when one sees them one thing, to think of them as the other. Whatever they are, they seem, whilst they are it, to be the genius of. They are little Perditas—but I cannot quite recall the passage. Two come now along the bank of the little streamlet, on the opposite side of which I am lying—some half-dozen paces off. Though I seem to be well concealed, as they get almost opposite to me they become suspicious. One retreats, not running, but with a quick step, his neck craned forward and held high, his feathers pressed against his body, so that his thinness and peculiar keel-like shape appears. He looks, now, much smaller as well as lankier than just before, his legs set more behind—prepared to run and fly at any moment. Was he ever a bold bird, ruffling and swelling out, running like a bull at another? I cannot believe it.

The other Moorhen remains for a few seconds at his ease, but

then becomes suspicious too, and retires in the same way. Beyond these two, and further inland, another one, after browsing a little, sits on the snow-decked grass, seeming to nestle there and make himself warm and comfortable. Rising then, he comes forward with a very peculiar gait—a sort of mincing half trot—lifting the feet up very high, and with great “springiness.” This curious motion, which seems to imitate that of a high-actioned horse, I have not observed before—at least, I do not remember it—in our own Moorhen; but I think I have remarked it, even in a more developed degree, in one of the Gallinules in the Zoological Society’s Gardens. But this may be a mere dream (the Gardens is a nightmare), one of those odd sensations of having seen a thing before, as though in another world. But whatever I may have seen once, I certainly see this Moorhen now, and so strangely does he look, that I think, at first, he must have hurt one or both of his feet. Now he sits down again, then rises and advances in the same way, till he enters the water just opposite me. Here he becomes suspicious, and swims fast away, with his tail flirted vigorously at each paddle. Then, again landing, he runs at a great pace, looking about half his former size—proving, if proof were needed, that his feet and legs are perfectly right.

Whilst watching the Moorhens, a Robin flies on to some water-weeds that lie upon the stream, and thence to the trunk of an alder-tree, where, for a second or two, he clings. It is easy to see how the tree-creeping habit may have originated. Most small, perching birds do occasionally—and some of them by no means clumsily—what the Tree-Creeper does always, and from tree-creeping—though not from the Tree-Creeper—the Woodpeckers have probably come into being.

A Dabchick comes up on the water now, but dives down again, as it were, *before* he comes up, a splash of water being all that I can see—the bird invisible. And now two of these little birds are sporting and ducking about in the water together, uttering from time to time a shrill, quavering note that sounds like—or something like—“queek, queek, queek, queek—queek, queek, queek, queek.” “‘Queek,’ pas ‘whit,’ Monsieur Fleurant. ‘Whit’! Ah, Monsieur Fleurant, c’est se moquer. Mettez, mettez ‘queek,’ s’il vous plaît.” They come along, these little queekers, till they are only about three—at last, perhaps, only

about two—paces from where I am, and “queek” from that distance. I keep hearing the little, tittering note, too, which I have attributed to them before. I have no doubt it is they, but they seem always to utter it when invisible amongst the reeds.

December 14th.—(A fine bright day, but very cold. A hard frost.) At creek, by the fallen tree, in the morning. “The bride has paced into the hall,” and a Moorhen along the bank—easy, elastic steps, head nodding and tail flirting in unison—nestles, then, on the grass, rises again, and steps along, as before—stands on one leg a little—puts it down—steps—draws it up again—glances about—inclined to preen feathers, but does not—nestles—a shoulder-glance—half “spies a danger”—rises and tiptoes out of sight. What a little bundle of caprices and apprehensions! But they all become her. “All her acts are queens.”

Now comes a “chack, chack” with great suddenness and energy, and then “chee-ee, chiroo,” both very sharp and high. Then one Moorhen chases another, flying and scudding through the water to land, having gained which the chased bird runs fiercely at a third that was feeding there, and pursues him all about. It is like that scene in ‘*The Rivals*’ where Sir Antony bullies his son, the son the servant, and so on. “Tis still the sport” in natural history, to see poor humanity aped. Really it is very humorous, the study—“teems with quiet fun,” as Gilbert says.

Again a Moorhen runs violently at an intruder—as he seems to consider him—on his territory, and chases him away. Another one nestles down amidst the snow and frost, fluttering his wings above his back, as a cabman might slap his arms across his chest on a frosty morning. For a few seconds there is a full, vibratory, vigorous flutter of both—equally and together—and then each is flapped separately, twice or thrice, before being folded. There are several more chases, and one bird keeps driving others all about, making sometimes quite a “*sauve qui peut*.” He starts, often, from a good distance off, and runs like a bull, as yesterday. Now, too, through the glasses, I can plainly see a Moorhen pecking at, snipping, holding in his bill, and then swallowing, the small, light, frosted blades of grass—“in the morning, in the morning, when the earth is fresh and dewy.” One is sitting on a tuft of bent and crumpled flags, half a foot above the water,

and pecks at weeds. Half a dozen or so are browsing over the meadow. Now the one upon the crumpled reeds nestles down upon them, softly and mously.

Though the flirtation of the tail is very habitual with Moorhens, though nine times out of ten, when you see them either on land or water, they are flirting it, still they do not *always* do so—"Nonnunquam dormitat bonus Homerus." "Non semper tendit arcum Apollo." One that I am watching is keeping his quite still, and one may see, sometimes, many together, browsing in this reposeful way. It can be a quiet, well-behaved tail enough, but let any kind of emotion, almost, possess the owner, and, heavens, how it flirts!

There is a Moorhen, now, preening and cleaning itself on the margin of the stream. It fans out the primary quills of each wing, whilst still keeping them pressed close to the sides, so that the wings make a little house for the tail, inside which it is both wagged and flirted, and so rubbed and polished by the quills. At the same time the whole body of the bird is wriggled, and the skin moves loosely upon it. The wings, too, now and again, brush down each side of the body alternately, whilst the beak keeps preening and making much of the feathers of the throat and neck.

There is a Snipe feeding with the Moorhens—that is to say, one or other of them is often browsing near him. He thrusts his long bill down amidst the muddy roots of grass-tufts in the shallow water, then works it rapidly up and down, withdraws it, seems to be enjoying something, thrusts it in again, and so on. He walks slowly and sedately through the water, then, on the grass, increases his pace, looking longer, lankier, and narrower than before. Now there are two feeding vigorously, always in the same way, the bill thrust down into the tufty, "patchily-in-shallow-water-standing grass," withdrawn, sometimes immediately, sometimes after a few workings about with it, making so many little nod-noddings of the head. The mandibles seem always working against each other—opened slightly and again closed—just like the Starlings; and à propos a Starling flies down now and feeds side by side with these two Snipes, and in much the same way, except that his head does not work up and down quite so constantly and methodically. They—the two Snipes—seem

getting something all the while, and sometimes the whole body seems to quiver with the satisfaction of it. It is a searching, probing, finding, and then gobbling down process. One of them brings up something out of the mud—something big, held at the end of the beak. At first I think it is a frog; but, no, it seems to be a lump of mud and grass-roots about the size of one—a grown one. He bobs his head up and down with it—just as he has been doing all the time—raising it from the ground and bringing it down upon it again, as if to divide and search it. Each time it descends it is lost to me in the grass, and, after two or three bobs, the bill comes up without it. The superiority, as an implement, of a Snipe's bill to that of another bird—a Starling's, for instance—seems to me one of degree merely, not of kind. It is used in just the same way.

This reminds me of quite another way in which some people suppose it to be used, for I was asked by a countryman about here—one of the old yeoman class, so unhappily passing away—whether the Snipe, when it flew up, really raised itself on its beak, using this—so I understood him to mean—as a sort of jumping-pole to swing up from. I said I should not have thought that it ever did so, but that all I could be sure of was that sometimes it didn't—so he remained doubtful.

Besides the Starling there was a Chaffinch, at one time feeding with these two Snipes. What an incongruous trio! but I am often struck with the way in which quite different kinds of birds come together. The Chaffinch both hops and walks, but his hop is not springy, and, it seems, rather, a transition between the two modes of progression.

Squirrels are about, again, in the pine plantations this afternoon. It is fine and bright, certainly, but a hard frost and very cold. A Blackbird is hopping and picking about amongst the dead leaves. He pecks them up and throws them, with leaves and sticks, to one side or the other, shovels them, too—using both head and beak as the shovel—and gives an occasional scratch as well. Whilst thus clearing a space, he crouches right down on his breast, amongst the leaves, in a brooding attitude. Several Blackbirds are doing this now, but, having watched a cock one from quite near, and marked the exact spot, I wait till he has flown off, and then walk straight to it. The more or less

cleared space is circular, and almost as large as a saucer, with a new-laid dropping in it to leave no room for doubt. Carefully examining it, I find two little fresh green vegetable substances, some rabbit-dung—but only one pellet looks as if it had had a slight peck—a weevil about the size of a small fly, and another minute coleopterous insect. The weevil is at first either torpid or feigning death—probably the latter, as many weevils do (or appear to do) this—but he soon becomes active. This gives a hint as to the food of Blackbirds on cold, frosty days in mid-winter—by inference of other birds too, but not many are such burrowers.

"Chi, chi, chi, chi, chi, chi," as the Blue Tit says—for that is one of his notes. I see him now clinging to the trunk of a fir-tree, which is the first time I have since my last entry of it in October. He does not, however, either ascend or descend the trunk, as on that occasion, but, after clinging a moment, flies on to a bough. Others are hanging on the under sides of the fir-cones, pecking at them and at the fir-needles, often fluttering, on a little whirr of wings, just above a bunch of these, before disappearing amongst them. Long-tailed Tits, too, are hopping about in the top twigs of some tall slender oaks—the oaks in this fir-plantation are, like the firs, tall and slender—hanging head downwards from the twigs. A Robin flies to a large Scotch fir, and clings to the trunk; remains there a few seconds, then flies down to the ground near its base, from there fits up again and clings some two or three feet from the ground; then an encore, as if he had known what I wanted, and so flies off.

Hooded Crows seem to dig a little in the ground for food, as do Rooks, though nothing like to the same extent. They both walk and hop—as do Rooks—but they hop more than Rooks do. Several I am watching now, have, I am sure, hopped, where Rooks would have walked. These Crows are funny birds. When one flies away from another, this latter, two or three times, lowers his head to the ground, and up again, each time that he lowers it uttering a low, deep note, like "croo, croo." When rejoined by his companion, he again makes his two or three bows, but I now hear no note, so that it must either have been absent or lower. Now when this bird, after being again left alone, rose and flew to some trees, uttering his "crar, crar," a number of

Rooks rose, too, from all about, and, after circling and flapping around a little, flew to a plantation, where, shortly, the Crow flew also. It was not quite the same thing as yesterday, therefore, since the Crow was not immediately joined in the air, when he cried out. Still it much resembled this, and the one case gives point to the other. The Rooks all rose as at a signal, and flew off to somewhere near to where the Crow had flown, and there, shortly, he went too. The whole gave the idea of some curious, oblique sort of relation between the two species, but what it was, or what it is, I know not. Yesterday I thought that the Rooks flew towards the Crow's cries, thinking he had found something. But now, since this was not the case here, and the two incidents are so much alike, "I do let loose mine opinion, hold it no longer."

The Golden-crested Wren's note is a little needley one, like the Blue Tit's "zee, zee, zee, zee," only thinner, a still slenderer needle of sound.

December 15th.—A dark, misty day—frosty withal, but not "kindly"—darkest and mistiest and frostiest, I think, in this clump of alders, growing amidst the muddy water of a muddy swamp. It ought not to be a frost to-day—it does not look like one—but it is. Frosty powder is on the litter of dropped twig and crumpled leaf that lies dead on the dead, dank earth: frost beads the upper stalks and sorrowfully drooping heads of the dilapidated reeds: beads, too, the thin threads of gossamer that, even now, loop them about—shaking still-ly with them in the still, sad air—whilst crumbs of it lie loose in the grooved channel of each long, narrow leaf, now brown and bare and brittle. It is all frost, and the black water in which everything is growing oozes under thin ribs of frosted ice. But it is a frost that saddens, not that braces and exhilarates. It seems born out of the mists that hang over all—a dead, dank sodden world, till a little spot of crimson life glows through the alders, and the Robin has perched on a bough. It was death, coldness, darkness before—now it is life, warmth, and colour.

December 16th.—It is very cold at 7 a.m.; trees and everything covered with white hoar-frost. Notwithstanding this there are numerous Squirrels about in the plantation, and actively feeding. They feed on the fir-cones, which should be a banquet

for them throughout the winter, as I said before. There is the saw-note of the Great Tit amongst the pines, now, as in the spring, but not quite so loud, and it does not last so long. Also the Coal-Tit's spring note, which is very much the same.

I counted twenty-three Moorhens to-day, browsing together, over the meadow by the little stream. One of them rushed violently from a considerable distance, at a group of three, putting them all to flight. A swift, determined bull-headed rush, as before described—the head held down and forward, in a straight line with the body.

December 17th.—At the creek this morning. A pair of Dabchicks play about for a little, in each other's company. Their note, at first, is a quiet "chu-chu-chu-chu-chu-chu." Then side by side, and with their heads close together, they burst suddenly forth with "cheelee, leelee, leelee, leelee, leelee, leelee." It is as if they said, "Shall we? Well then—now then," and started. This is the Dabchick's contentment note. You know what it means directly. It expresses satisfaction with what has already been accomplished, present complacency, and a robust determination to continue to walk—or swim—in the plain path of duty and pleasure. What a pretty little scene! And how grand to be watching it from a few yards off with not a Dabchick the wiser! You little shy, cool-dipping, reed-haunting things—so dapper and circumspect! What then! Have I "torn out the heart of your mystery"? No doubt about what you say for the future. I have it here. Yes, and I know what it means, and how you say it.

December 18th.—At the creek, to-day, there is the most extraordinary note, on the bank just opposite, either in some alder trees or amongst the grass at their base. I now see a Snipe on the ground, near the alders, and to him I must attribute this strange sound. There are two feeding—and another I see in the shallow water, just off the bank. One of the two—but an alder now hides them—utters a hoarse, grating, lengthened cry, like "chac-cha-a-a-a-a-a" (a as in "air"), and this is more than twelve times repeated. The other one, whilst in full view, and quite near, suddenly disappears in a mysterious way. He does not seem to move, but is all at once gone, and I search for him in vain, with the glasses. Now, however, I see him—just where he

was, but I had mistaken him for a piece of horse-dung. I beg his pardon. I see this bird feeding, quite plainly, both in the meadow, a little way from the stream, and just off the bank, wading in the water. He searches the ground with his long bill, as before described, and keeps working the two mandibles together. As a rule they do not open much, which suggests that he gets small things only—but once they do, rather more, and I see the cleft between them all the way up. No doubt but the Snipe's bill is an instrument of high efficiency. What strikes me, however, is that the Starling seems to do just as well with his.

Now comes another most remarkable sound, uttered by a Snipe, but not by this one. It is hoarse and cat-like, and is repeated twenty-six times (!) close together, at the very least—then continues, again, after a little pause. I could never have imagined—at least could never have been prepared for—such a sound as this. Unfortunately, I could not actually see the bird uttering it, as he had just walked behind one of the clumps of alders. These bird-cries are most remarkable. An instrument that would accurately reproduce those of the Moorhen, Snipe, and Dabchick would make a sensation in any drawing-room, and a fortune on the Aquarium stage.

A Moorhen is now taking a bath—not afloat like a Duck, but standing just off the bank, where the water is not above a few inches deep. She ducks her head, then, jerking it up, lets the water run down her neck, and over her back, flirting it about with her wings and tail. At the end of the bath she gives both her wings a violent shake above her back, lasting for some seconds, and then proceeds to preen herself carefully—a pretty toilette scene, as pretty as "Gipsy toilette," that very pretty picture. A characteristic action and attitude is the one wing extended and pointed backwards towards the ground, the corresponding leg being similarly extended and raised against it, suggesting that the claws are passed down the primary quills, as being out of comfortable reach of the beak, but whether this is really the case I am not quite sure. This bird walked from some way off, in the meadow, straight to the bank, evidently with the purpose of taking a bath in her mind, and now, having carried it out, she walks back, and continues to browse.

Three more Moorhens come, at intervals after this, to the bank, and bathe in the same way, just off it, standing in a few inches of water. Not one of them has bathed right in the water, like a Duck, and this, I think, if it is habitual, is an interesting trait, for surely it looks back to a time when the bird was not so aquatic as it is now—when it was more a wader and less a swimmer. It would then have feared to bathe out of its depth, and, though it has no need to fear it now, yet the old habit remains. Probably the last things to change in a gradual change of life would be those which were least affected by such a change. Bathing has nothing to do with the getting of food, or with sexual activities—with hunger or with love—and as long as the water-bird did not get a long way from the land, it might be almost as conveniently performed on the one element as the other. Not quite, however, and therefore, as the course of life became more and more aquatic, this and almost every other habit would, at last, become modified. Now the Coot very closely resembles the Moorhen, but it is fin-footed, it dives better and far more habitually, and it bathes afloat on the water. In all this we can see a longer course of weaning from terrestrial life than the latter bird has undergone.

I counted to-day twenty-five Moorhens—as a minimum—browsing together—sometimes close together—over the meadow-land. There were frequent panics, when either all or considerable numbers of them would fly to the water, beginning to come again, sometimes, almost as soon as they had got there. It was very interesting to see how some birds, after looking all about, prepared, at any moment, to follow their companions, would yet resist this impulse to flight, concluding, evidently, that there was no real ground of alarm. Here we have individuality and character showing themselves more in some birds than in others. Once the whole flock were put up by a Heron, who, however, only came sailing leisurely by, and went down not far off; and again by some other bird that I missed, and whose hoarse cry in the air I did not recognize.

Squirrels about in the pine-plantations to-day. "Quobba-wobba-wobba-wobba" is the class of remark they indulge in. It is much milder to-day, certainly, but, having seen them running over snow, in the hardest weather, I doubt if this has much to do with it. They were about on the 12th, for instance.

THE AMSTERDAM AQUARIUM.

BY GRAHAM RENSHAW, M.B.

(PLATE VI.)

Few of the zoological collections of the Continent are so interesting as the valuable series of living creatures exhibited in the Gardens of the Society "Natura Artis Magistra" at Amsterdam. Founded in 1837, the grounds have been repeatedly extended, until at last the final addition granted by the Municipal Council in 1877 completed the great enterprise. The land was ceded to the Society on condition that it should be used as the site of an aquarium, in which higher zoological teaching should be given partly at the expense of the Society. The splendid building which was duly erected will bear comparison with any rival institution. It was opened on December 2nd, 1882. An attempt is made in this paper to describe its contents as they appeared at the time of my visit, although to be fully appreciated this fine aquarium requires personal inspection.

On ascending the broad marble staircase the visitor enters a spacious hall, which, instead of being decorated with paintings, has its walls pierced by the plate-glass windows which form the fronts of the various tanks. On one side are ranged the marine exhibits, while the other is devoted to the fresh-water series.

Commencing with the salt-water fish, the first tank was very fully stocked with Blennies (*Zoarces viviparus*), quaint fish somewhat resembling the Loach of British streams. These odd creatures, of all sizes and ages, lay on the sand of their tank in palpitating crowds, or crept over the rocks in a most uncanny fashion, their long compressed bodies recalling the tails of Efts or Salamanders. The odd expressionless faces of these Blennies were very comical as they stolidly stared unwinkingly through the glass.

The second tank contained huge Codfish (*Gadus morrhua*), which swam slowly to and fro ; great Weevers (*Trachinus draco*)—one of the few really poisonous fishes known—lay in the sand, their striped bodies half buried in the yellow carpeting of the tank ; and Grey Gurnard (*Trigla gurnardus*), whose marbled sides were beautifully spotted with silver, stalked about on their elongated fin-rays as on so many spidery legs.

The third tank was filled with glittering Herring (*Clupea harengus*) ; while a huge shoal of Smelts (*Osmerus eperlanus*) seemed to make the tank itself quiver as their teeming numbers rippled to and fro, like a piece of streaming seaweed entangled in a strong current. On the sand beneath, in contrast to so much beauty, there scuttled a number of fussy King-Crabs (*Limulus polyphemus*), their mailed bodies recalling those of Armadillos, whilst their long tails resembled the handles of frying-pans. One unfortunate Crab lay sprawling helplessly on its back, like a turned Turtle, whilst its gill-leaflets pulsated in rhythmical sequence, as one might turn over the pages of a book.

In the fifth tank were some large Codfish, and also some Sapphirine Gurnard (*Trigla hirundo*). In spite of their odd shape these Gurnard are very beautiful fish. Their carmine bodies and enormous blue gill-fins besprinkled with spots remind the entomologist of some huge grasshopper or locust, rather than of any denizen of the sea ; moreover, the edges of the gill-fins are dazzling with a superb iridescence, which recalls the sheeny hues of a *morpho* butterfly.

Further on in this interesting series was a small Shark (*Mustelus vulgaris*)—the “Smooth Hound” of British fishermen. The curious gill-slits pulsate with every respiration of the fish, like ventilators regulated by a hidden mechanism—as indeed they really are. A number of Dogfish (*Scyllium canicula*) also swam to and fro, diligently inspecting everything with an intelligent scrutiny very different from the dull apathetic gaze of Cod and Mullet, Haddock and Ling.

The most interesting of all the marine tanks, however, was that which contained the Sea-Horses (*Hippocampus antiquorum*). There were over forty of these curious little creatures on exhibition. Purplish black, like a dried raisin, or dressed in a livery of

greyish brown, the Sea-Horses swam slowly about, propelled by the quivering action of the dorsal fin. Some lay anchored on the bottom, their tails curled round the seaweed, and the intelligent little horse-heads swaying this way and that in a charming manner (*cf. Plate VI.*). These weird-looking fish, with their truncated snouts and crested heads, bore a remarkable resemblance to the knight or rook in a set of chessmen, whilst their odd appearance was heightened by their deeply sculptured bodies, and their tails prehensile, like that of a Chameleon. Some of the Sea-Horses wandered over the seaweeds like cattle in a meadow; others rose or sank quietly, their buoyant bodies moving gently in the still water. The Dutch keeper informed me that these fish had come from Bordeaux, and did not seem to think that they would do well in the cold weather.

The remaining marine tanks contained Sea-anemones—a subaqueous flower garden; Sea-Scorpions (*Cottus scorpius*), with immense heads armed with spines; also more King-Crabs and Herring.

The large and well-lighted room at the end of the aquarium hall was mainly devoted to a living collection of tropical fish, and I went systematically round all the tanks, examining the contents of each. Here were to be seen some Japanese Gold-fish (*Carassius auratus* var. *japonicus*), each of which was adorned with three tails. Here also the gorgeous Paradise Fish (*Polyacanthus viridiauratus*) from China, richly striped with ultramarine-blue and bice-green. These Paradise Fish had bred in the aquarium, and were the largest I have ever seen. The North American Chætodon (*Mesogonistius chætodon*) and the Striped Sunfish (*Apomotis obesus*) were exhibited close by, as were also examples of the armour-clad Callichthys (*Callichthys asper*) from Surinam, whose gaping mouths were fringed with long barbules, and whose roughened bodies were enmailed with greenish scales. The Chameleon Fish (*Heros* sp.)—dull coloured enough at the time of my visit—was also on view. There was also an example of the Indian Perch (*Anabas scandens*), which is alleged to climb trees. The gem of the tropical collection, however, was the lovely Speckled Callichthys (*Callichthys punctatus*), a fish of exquisitely beautiful shape, and golden green in colour, mottled with greenish black. These more delicate species were all

carefully kept warm, the heat of the water being maintained at between 70° and 80° F.

Besides the fish, the end hall contained a considerable number of amphibians—Frogs and Newts. Here one saw the Red-bellied Newt (*Molge pyrrhogaster*) of Central Europe, whose carmine abdomen contrasted brilliantly with the dull black upper parts. There were also several Olms (*Proteus anguineus*)—that strange blind Eft from the caverns of Carniola, whose pinkish-white body betokens that it lives in perpetual darkness. The Amsterdam Olms had been exposed to the light, and were gradually becoming greyish. The collection also included eight Mexican Salamanders of huge size—the “Axolotl” of naturalists. All these eight individuals were black, white Axolotls being very rare. However, in the next tank there reposed no fewer than eight white Axolotls, lying huddled up together, their long pinky-white bodies suggesting a number of Ferrets in a basket. The pulsation of the blood in the gills of these albinos was easily discernible. Both black and white Axolotls are the tadpole stage of the *Ambystoma tigrinum*, and there were a couple of magnificent *Amblystomæ* in the Aquarium; their richly mottled skins well merited the name “*tigrinum*,” bestowed on them by scientists.

Returning by the long hall first entered, the survey of the Aquarium was completed by an examination of the fresh-water fish in the series of tanks facing the marine collection.

Amongst the fish in the fresh-water series were crowds of Black Bass (*Micropterus salmonides*), in flourishing condition; the strange Perch-Pike (*Lucioperca sandra*), a fine fish whose appearance combines the characters of both Perch and Pike; and a Common Carp (*Cyprinus carpio*), of enormous dimensions.

A very interesting exhibit was a tank of young Sturgeons (*Acipenser sturio*), about three feet long from the tip of the snout to the end of the tail. Above these Royal fish swam a teeming shoal of Rainbow Trout (*Salmo irideus*).

Last of all, one may mention the huge Purple-black Salamander (*Sieboldia maxima*), from Japan. This species once made the Amsterdam Zoo famous, for as long ago as 1860 one of these hideous Salamanders was brought safely alive to the

gardens—a scientific treasure, if not a beautiful one, being probably the first ever sent over.

The above is but a short account of the inmates of this truly splendid Aquarium. The visitor might profitably spend hours, and the naturalist days, if not weeks, in noting the habits of the commercial food fishes, and others so excellently displayed. Enough, however, has been said to indicate how rich a collection has been accumulated in the Dutch capital, and how splendid a contribution was made to Science in the founding of the Amsterdam Aquarium.

NOTES AND QUERIES.

MAMMALIA.

A British Example of the Mouse-coloured Bat.—On going through the Bats at the Cambridge Museum recently, I came across an undoubted specimen of *Myotis myotis*, the Mouse-coloured Bat, labelled "Girton, 1888, H. Gadow." Dr. Gadow tells me that it was taken at Girton, and brought to him alive by one of his lady students. There can therefore be no doubt that this is a genuine wild-taken specimen of this species, although probably brought over from the Continent with some plants or other produce. This species is only known in England from some examples taken in the British Museum grounds in Bloomsbury prior to 1885. The actual specimens have been lost sight of, but it is tolerably certain that an example now in the Museum and labelled "England" was one of the original specimens. It has since then been twice recorded, but in both cases the record has been contradicted, so that the Cambridge specimen is the first thoroughly authentic British example. The species is extremely abundant on the Continent, and from its large size very conspicuous, so that if it usually occurred in these islands it would not be likely to be overlooked, and we are inclined to think that the specimen under consideration must have owed its transportation to some artificial means.—J. LEWIS BONHOTTE (Fen Ditton Hall, Cambridge).

Albino Hedgehog in Yorkshire.—On Aug. 8th I had brought to me a very beautiful albino Hedgehog, which had been captured at Goathland, Yorks, on Aug. 1st. It was a very pure white upon the spines and hair, the eyes, nails, and naked parts of the skin being of a delicate pink colour. It was alive when brought to me, but, owing to lack of proper nourishment, was in a dying condition, and only lived a few hours after it came into my possession.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Rare Cetaceans on the Yorkshire Coast.—On Aug. 19th my attention was drawn by Sir Robert Lloyd Patterson to the fact that a Beluga or White Whale was disporting itself very close inshore in the South Bay at Scarborough. I was unfortunately too late to see it

myself, as it had headed away to sea, but it was noticed both upon the same and also upon the following day by several boatmen and others who were out in the Bay. When last seen it was about two miles north-east of the Castle Hill, and rose close to a boatload of anglers, who were considerably alarmed at its close proximity. Sir Robert Lloyd Patterson very kindly gave me the following account of what he had seen :—

" Understanding that you are the Recorder of the local Natural History Society, I put in this form, for reference, the substance of what I told you to-day relative to the appearance of a large cetacean in the Bay here this day shortly after noon. I was at the south end of the Spa promenade on the sea front very shortly after high water, the sea still breaking against the wall, when I noticed what at the first glance I took to be a breaking wave ; but almost instantly I saw that it was a good-sized animal which, but for its colour, which was about as white as this paper, I should have taken to be a Rorqual of eighteen to twenty feet long. It was swimming north parallel to, and about 120 yards distant from, the Spa wall. I walked along, and saw it rise several times again—perhaps eight or ten times altogether—when it headed out to the eastward, increasing its distance from the shore, and was finally lost to view. It had no dorsal fin that I could see, and I have not a shadow of doubt but that it was a Beluga, or White Whale, a most interesting and, I take it, quite unique occurrence. Unless albinism occurs among the cetaceans—a thing I never heard of—it cannot have been anything else but a Beluga. I leave it to you to communicate the foregoing, on my authority, to such scientific journals as you think proper."—R. LLOYD PATTERSON.

" P.S.—The animal was so white and so large that one could see its white form *beneath* the surface before it rose above it. It was swimming in a very leisurely manner, not more than five miles an hour."

I think I am correct in saying that this most interesting occurrence is the first recorded for the Yorkshire coast, and only the second for England, and it was extremely fortunate that the appearance should have been witnessed by such a competent authority.

On Aug. 30th, while on Filey Brig at the portion known as the "Emperor's Bath," where there is twenty feet of water close up to the rock edge, my attention was attracted by three tall black objects appearing and disappearing on the surface of the water, which was somewhat turbulent. As they drew nearer, I was able to see that they were the dorsal fins of three large cetaceans, and they eventually approached to within fifty yards of where I was standing, and I was able clearly to see that they were Grampuses. They were swimming

slowly and with great regularity, all rising together, and descending at the same time. They raised their heads high out of the water, so that the under jaw and the distinctive white patch behind the eye were distinctly visible. Once or twice they descended, and remained below water for a considerable time, but eventually, after having been within a few yards of me for upwards of half an hour, continued their journey southward, and were finally lost to view amidst the broken water, into which they fearlessly entered. A Filey man, who came along at the time, told me that he had seen three similar "fish" on the previous day, which he said "were barking like dogs." The specimens which I saw uttered no sound.—W. J. CLARKE (44, Huntriss Row, Scarborough).

AVES.

Bluethroat near Eastbourne.—On Sept. 20th, when walking near Eastbourne on some rough shingle with bushes scattered about it, I saw a specimen of the Bluethroat (*Cyanecula suecica*). I am well acquainted with the bird in Norfolk, and told it at once by its tail. Mr. A. H. Streeten, who has also shot the bird in Norfolk, was with me, and recognized it directly I pointed it out. We were at one time within ten yards of it, so we can hardly have been mistaken. The occurrence seems specially noticeable, as, when I left Norfolk on the 18th, no Bluethroats had been taken there this season.—E. C. ARNOLD (Blackwater House, Eastbourne College).

"An Unknown Warbler in Oxfordshire."—When residing in Westmoreland some years ago, I used to notice a bird resembling a Willow-Wren, but rather larger and with darker plumage on the back than any I had previously observed of this species. Being unable to identify it, I referred to Bewick, and came to the conclusion that the specimen under observation was what is locally known as a "Strawsmeer." Bewick does not describe this bird very minutely, but says that it arrives early in April, begins to sing at once, and continues singing till August. I did not make any notes of my observations, but I believe this bird has an eye-streak. Is it possible that the Warbler seen by your correspondent, Mr. Warde Fowler, is a "Strawsmeer"?—R. H. RAMSBOTHAM (The Hall, Meole Brace, Shrewsbury).

White Wagtail at Balbriggan, Co. Dublin.—I saw a male White Wagtail (*Motacilla alba*) on Sept. 4th at the Delvin River, two miles from Balbriggan. Its broad white forehead and grey back first attracted my notice as it flew about from stone to stone in the bed of the little river, which is the boundary between the counties of Dublin

and Meath. It then flew up on the telegraph-wire over the railway viaduct, when I had a good opportunity of noting the diamond-shaped black mark on the throat and breast, and the very long tail. The picture in Morris's 'British Birds' very aptly represents the bird as I saw it at the Delvin. I had never seen one in Ireland before, and but once in England, near Clifton Suspension Bridge. Mr. Ussher, in his 'Birds of Ireland,' has some interesting records of the occurrence of this bird, and Mr. R. M. Barrington, in his 'Migration of Birds,' notices its occurrence at the Blackwater Bank and Codling Lightships; he also received a fine specimen in 1900 from Inishtrahull.—CHARLES W. BENSON.

[In these pages Mr. Robert Warren has recorded the presence of this species—the sixth year in succession—on the island of Bartragh, in Killala Bay (*cf. ante*, p. 190).—ED.]

A Second Brood of Starlings.—A year or two ago I sent you a note (Zool. 1897, p. 884) as to a pair of Starlings having reared a second brood in the roof of an adjoining house. That brood came to an untimely end through having been frightened out of their nest by workmen before they were sufficiently mature. I have for some time been aware that a second brood was in progress this autumn in the roof of the same house. (Were they the progeny of the same parents as the former brood?) On Sept. 27th five healthy and vigorous young birds were "grubbing" on the lawn, practically strong enough to take care of themselves, but receiving occasional help from their parents.—R. M'LACHLAN (Lewisham, London).

Nesting of the Grey Crow in Suffolk.—Referring to Col. Butler's note (*ante*, p. 850), I may mention that the late Mr. N. Fenwick Hele, in the second edition of his 'Notes or Jottings about Aldeburgh' (p. 77), records the nesting of the Royston or Hooded Crow at Hazlewood, near Aldeburgh, in 1872 and 1873; and not long ago, when arranging the eggs in the Ipswich Museum, Mr. Woolnough and I found an egg marked in Mr. Hele's handwriting, "Royston, Hazlewood," among them.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Cuckoo calling in September in Italy.—In the last number of 'The Zoologist' (p. 850), Mr. J. W. Payne alludes to the fact that Sir Conan Doyle, in 'Rodney Stone,' makes the Cuckoo call in September. Allow me charitably to suggest that Sir Conan had heard the bird in the South of Europe, for I have just had a postcard from my friend Mr. B. W. Henderson, Fellow of Exeter College, Oxford, dated Bibbiena, Sept. 6th, in which he writes:—"Heard the Cuckoo yesterday in first-

class voice among walnut forests on my way from Vallombrosa here—a ten-hour tramp over the mountains with a knapsack." He adds that the heat was excessive even for Italy, and that it had not rained for nearly two months.—W. WARDE FOWLER (Kingham, Chipping Norton).

Cuckoo (*Cuculus canorus*) in Scotland: calling in July.—Observations made in Braemar during the last two summers have some bearing on Mr. J. W. Payne's note (*ante*, p. 851). In 1902 Cuckoos continued calling "loud and oft" up to July 9th; on that date one was seen and heard in Glen Lui at an altitude of 1800–1850 ft. In the evenings the calling continued till about 10 p.m., and it frequently wakened me as early in the morning as 2.30 a.m. In 1903 it was quite different, only one bird being heard on July 6th—a faint and wavering call.—HUGH BOYD WATT (8, Victoria Drive, Glasgow).

Wigeon breeding in Ireland: a Correction.—In 'The Zoologist' for 1901 (p. 269), a note appeared from me announcing the discovery of the Wigeon breeding in Ireland. I am afraid that the evidence for identification was not sufficiently complete, as Mr. Ussher relied entirely on the down taken from the nests to identify the species. Mr. Noble, who has made a study of Ducks and down, says that the down is not sufficient, and the down of Wigeon and Shoveler vary so much in type and resemble each other so closely that it is impossible to distinguish between the two. As Shovelers were in the majority on the occasion referred to, I think the question of Wigeon breeding in Ireland not sufficiently established.—JOHN COTTNEY (Hillsborough, Co. Down, Ireland).

[A similar disclaimer from Mr. Patterson appears in the last issue of 'The Irish Naturalist.' He writes:—"There is little difference between the down of some Shovelers and the down of some Wigeon, but there is always a difference in the small feathers found among the down. In the Wigeon these small feathers are *pure white* with light grey bases; in the Shoveler they are *pale buff* with dark brown centres. This is stated on the authority of Mr. Heatly Noble, who has made a special study of Duck's eggs and down."—ED.]

Stock-Dove (*Columba oenas*) in the Isle of Man.—The note of Mr. F. Graves on this subject (*ante*, p. 816) recalls to my memory the fact that in May, 1896, Mr. W. E. Teschemaker and I found a nest of this bird, containing two young ones, in a hole near the cliff-top between Seafield (St. Anne's) and Derbyhaven. The young Doves were kept in a wicker cage, but did not take kindly to captivity, judging from the

quaint remark made in the following year by the Manx servant who attended to them : " It is not tamer they are getting, but wilder," and soon afterwards they were set at liberty. In August of the present year I saw a pair of Stock-Doves near St. Anne's Head. With reference to the Tree-Sparrow, I may observe that my friend Mr. J. C. Bacon informs me he has known of its nesting in the garden at Seafield for several years past.—T. H. NELSON (The Cliffe, Redcar).

Black-winged Pratincole in Sussex.—On July 18th last a Black-winged Pratincole (*Glareola melanoptera*, Nordmann) was shot near Rye, and, having been sent to St. Leonards for preservation, was brought in the flesh for my inspection. It was carefully sexed, and proved to be a female. This forms the second recorded occurrence of *G. melanoptera* in Britain (cf. Dr. N. F. Ticehurst, Bull. B. O. Club, xiii. p. 78, June 30th, 1908. The bird recorded by Dr. Ticehurst was a male, and somewhat brighter than the present specimen). For obvious reasons I am precluded from giving fuller particulars—a circumstance I much deplore, as the occurrence of the species so far westward is very noteworthy. *G. melanoptera* differs from *G. pratincola* chiefly in having the under wing-coverts and axillaries black instead of chestnut. Mr. H. E. Dresser gives the summer range as " South-east Europe, in Russia north to about 56 $\frac{1}{2}$ ° N. lat. ; . . . Asia Minor and Asia east to the Altai Mountains " (' Manual of Palæarctic Birds,' ii. p. 780). W. RUSKIN BUTTERFIELD (St. Leonards-on-Sea).

Little Stint (*Tringa minuta*) inland in Cheshire.—A sand-spit at the mouth of a little brook which flows into the mere at Great Budworth often serves as a halting-place for wading birds on passage. Here, on Aug. 29th, I found a Little Stint feeding at the water's edge. The bird, as is the wont of its species, was extremely tame, and during the half-hour I spent with it allowed me to repeatedly approach within five paces. That distance, however, marked the limit of its confidence, and it evaded any attempt at a nearer approach by flying out over the mere, only to return to the spit again and resume its feeding a few yards further away. When on the wing it constantly uttered a soft, low, trisyllabic note. Before taking flight it sometimes retreated, wading belly-deep in the water, and once or twice it swam for a few inches. At such close quarters I could see its black bill and legs and the details of its plumage very clearly, and was even able to make out its hind toes when it ran along the sand. It was a young bird in autumn dress, having white feathers on the scapulars, and an ill-defined and hardly perceptible buffish band on the breast; the rest of the under parts were white. The wing-coverts and the long secondaries

were dark brown, each feather being broadly edged with buff. The white forehead and cheeks and the broad white eyebrows showed up the greyish-brown crown, and a streak of the same colour which extended from the lores to behind each eye.—CHAS. OLDHAM (Knutsford).

Black Tern (*Hydrochelidon nigra*) in Cheshire.—On Sept. 6th Mr. F. Brownsword and I watched a Black Tern for some time at Budworth Mere, near Northwich. Now and then the bird would rest on one or other of the posts which project above the water, but it spent most of its time flying in a buoyant, desultory fashion up and down the mere, dropping diagonally at frequent intervals to snatch food from the surface of the water, or just above it. It was a bird in immature plumage, the forehead, collar, and entire under parts being white, the mantle not uniformly slate-grey, but marked, especially along the carpal joint, with grey of a darker shade.—CHAS. OLDHAM (Knutsford).

Occurrence of the Sooty Tern in Suffolk.—At the latter end of March or beginning of April, 1900, Mr. J. Nunn and Mr. G. Mortimer, jun., found a bird lying dead on the heathland between Thetford and Brandon, in the parish of Santon Downham. The bird was found on some bracken, about half a mile from the river Little Ouse and the highway between Thetford and Brandon, and a quarter of a mile from Thetford Warren, which is in the administrative county of Norfolk. Mr. Nunn, who lives at Little Lodge Farm, sent the bird to Mr. F. Rix, of Thetford, who stuffed it, and informed the owner it was a "Black Tern." It remained at the farmhouse until September of this year, when Mr. W. A. Dutt, of Lowestoft, and the writer called and saw the bird. Neither of us, though confident it was a rarity, was able accurately to determine the species. I therefore took a written description of it, and on my return to Norwich quickly identified it as a Sooty Tern (*Sterna fuliginosa*). This was subsequently confirmed by Mr. T. Southwell. The bird is an adult, in good plumage, and well stuffed. Mr. F. Rix, who stuffed it, informs me that the bird was very decomposed when taken to him early in April, 1900. It must have been dead at least five or six days, and he had great difficulty in skinning and mounting it. The breast-bone was "almost like a razor." There was nothing in the crop or bowels but dark clayey moisture, and no marks of shot or any wounds upon the skin. He came to the conclusion that it had died from exhaustion. March, 1900, was a month of uniformly low temperature, but there appear to have been no heavy gales from the south-east or south-west to account for the presence of a Sooty Tern so far from its usual haunts. This record is the fourth only for the British Isles, and the seventh for all Europe. The British

occurrences were at Tutbury, near Burton-on-Trent, in 1852; near Wallingford, Berks, in 1869; and near Bath, in 1885. The records for the Continent (both lists are taken from Mr. Howard Saunders's 'Manual') are—one near Magdeburg, one near Verdun on June 15th, 1854, and one captured in a Trout-net in Piedmont on Oct. 28th, 1862. This is consequently a fresh species for either the Suffolk or Norfolk lists.—W. G. CLARKE (Norwich).

[In our last volume (1902, p. 355) Mr. Chas. Oldham recorded the occurrence of this bird in Lancashire. The specimen was exhibited at the meeting of the British Ornithologists' Club last November.—ED.]

Sabine's Gull near Scarborough.—On Sept. 5th a very fine fully adult female Sabine's Gull (*Xema sabini*), in perfect winter plumage, was shot a little to the south of Scarborough, and was brought to me in the flesh. On the 20th a good many small migrants were moving upon the coast, both departing and arriving. Amongst the latter I noticed, and examined closely with the glasses at a short distance, a Black Redstart, a female or a young male. The bird was still at the same place on the 22nd. On the 21st a second adult Sabine's Gull was shot in Filey Bay. The bird, which had not moulted, still retained the black head characteristic of the breeding season. I also had the opportunity of examining this bird in the flesh. During the first week of September a considerable movement of Greenshanks took place along the coast, and I saw five or six specimens which had been shot. W. J. CLARKE (44, Huntriss Row, Scarborough).

Sabine's Gull in Yorkshire.—On Sept. 3rd, by the merest chance, I obtained an adult Sabine's Gull (*Xema sabini*) from a sea-bird shooter who had just come into Bridlington Harbour with his spoils. When walking on the North Pier before breakfast, I saw the boat coming in, and, turning my binoculars on it, noticed the Gull lying on one of the seats. Thinking that a tiny Gull with a dark grey head must be Sabine's Gull, I lost no time in getting down to the landing-stage, and found that my recognition was quite correct. My bid for the bird, which the shooter called a "Swallow," was accepted, and, as we were leaving Bridlington the following day, I was able to bring it home in the flesh and set it up here. It has made a very good specimen, and is an interesting addition to our collection. The bird is a female, in full summer plumage, with the exception of a few white feathers on the chin and throat, and dark markings on the inner webs of four tail-feathers; the under parts are pure white without any roseate tint. As it was hardly cold when I obtained it, I noticed that the yellow on the

tip of the bill was very bright, the inside of the mouth orange-red, like that of a young Cuckoo, and the legs and feet pale brownish grey. Sabine's Gull in immature plumage has either been more frequently obtained or more often recognized of late years than formerly, but in the second edition of his 'Manual,' Mr. Saunders was only able to enumerate the occurrence of six adults. One of these was shot in Bridlington Bay in August, 1872 (Zool. 1872, p. 8316).—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Sea-bird Slaughter.—What I wrote on this subject in 'The Zoologist' (*ante*, p. 354) was fully confirmed by the events of the first few days in September. A resident in Bridlington told me that one shooter obtained twelve dozen birds in one day, and I think it is no exaggeration to say that for the first few days of September the number of birds shot (chiefly Terns and Kittiwakes) averaged over a hundred a day. Mr. Oxley Grabham has pointed out (Zool. 1901, p. 228) that there is a market for them at sixpence each, and this statement exactly agrees with information given to me on very good authority. A wounded Tern fluttering in the water acts as a decoy, and brings others up to the boat, or a dead bird thrown up and allowed to fall into the sea is used in the same way. There are two classes of shooters from which the sea-birds suffer: the shooter for the millinery market referred to above, and the shooter who fires for his own amusement at anything from a downy Guillemot upwards, and often does not even care to pick up his birds. I believe there is now somewhat stringent legal protection afforded to the sea-birds on the east coast of the United States, and a pretty sharp look-out is kept on any boat from which a gun is fired. While there are no easier birds to shoot than the Terns and "Kitties," there are no birds more difficult to shoot without being detected, as the killing is done on the open water, and when there is light enough to shoot by, the boat can be watched. If only Yorkshire naturalists could see their way to agitate either for a close-time still more extended, or the absolute protection of certain birds all the year round, they might feel certain of the support and co-operation of their brethren elsewhere, for the Terns which pass down the Yorkshire coast in late summer and early autumn have more than a local interest. There can be little doubt that they are the identical birds protected at considerable cost and with much trouble at their breeding-grounds on the Farne Islands.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

ANIMAL PSYCHOLOGY.

Can and do Birds Reason? Do Men also? (*Zool. ante*, p. 328).—May I endeavour to reply shortly to the above question? "Instinct"—as a term—always seems to me to be a refuge of the destitute. "Intelligence," I take it, is an active principle; "influence" a passive principle. "Instinct" and "inherent impulse" are vague and unexplainable expressions. So is "prompting each individual" vague and unsatisfying. But "environment" is the better expression. This does away with another vague expression, *viz.* "chance." "Intelligence" seems to me, if credited to birds, &c., to be a misnomer. How would it do to say instead, "forcefulness from outside environments"? In other words, "environing circumstances" to each and all. I take it this is the true explanation of many natural-history phenomena. But these environing circumstances vary in many and diffuse directions, and therefore the results vary. So in nest-building; so in habits; so in migrations and dispersals; so in the whole history of birds and the whole animal kingdom. The pressure of environing circumstances acts—acts. It is not will-power in the bird or animal, but the direct action of the surrounding circumstances, which may well include the example or tuition of the parents, where that is exercised; of foster-parents also. In how far does heredity or transmitted brain-energy come in? Perhaps the most helpless of all infants is the human infant, and the helplessness continues longer. That is probably because the human infant is of far greater complex nature than any of the lower animals, and in consequence knowledge takes long to develop. But even man is not proof against environing circumstances. Possibly angels may be. Another word often used is "intuition" (*op. cit.* p. 382). What dictionary successfully defines it? I do not mean defines it to our uses, but I mean defines it correctly as a scientific expression. The writer I am replying to, or trying to reply to, *admits* his belief in "the possession of instinct by birds" (p. 382), and says, "We unanimously place (it) to their credit." Do we? What is instinct? Instinct we cannot scientifically define; therefore, instinct is an unknown quantity. We may accept the descriptive phrase—automaton—in lack of a better, only, however, because of the similarities or the differences caused by environment.—J. A. HARVIE-BROWN (Dunipace, Larbert, Stirlingshire, N.B.).

[We quite agree with Mr. Harvie-Brown on the extremely vague conception appertaining to the term "instinct." It is perhaps most clearly understood as a theological proposition, used by a school of thought advocating an essential difference between man and other

animals. Thus Paley defines an instinct as "a propensity, prior to experience, and independent of instruction." Naturalists have also been swayed by a similar predilection. Blumenbach went so far as to state: "Man then alone is destitute of what are called *instincts*." He also maintained that "instinct always remains the same, and is not advanced by cultivation, nor is it smaller or weaker in the young animal than in the adult." Reason, on the contrary, he held, could be compared to a developing germ. Waitz, the anthropologist, urged that "we must not, however, estimate too lightly what animals really learn from experience. The mysterious word 'instinct' conceals, in the psychical life of animals, more intellectuality and less mechanism than is usually assumed." But he perhaps goes too far when he states:—"Just as the civilized man conquers the savage, so does the latter overpower the brute, not so much by physical as by mental force. He uses their instincts in a variety of modes to deceive them, imitates their sounds, catches them by baits, and hunts each species according to its peculiar habits." But the last sentence at least would apply to most animals in their necessitarian war upon one another. It is possible that when using the term "instinct" we are expressing the limit of our own reason. The word has become inseparable to our language, and is used in a loose way, as when we speak of a hasty judgment or action as "instinctive," or describe one with whom we do not agree as "an unreasonable man."—ED.]

NOTICES OF NEW BOOKS.

Turner on Birds: a Short and Succinct History of the Principal Birds noticed by Pliny and Aristotle, first published by Doctor WILLIAM TURNER, 1544. Edited, &c., by A. H. EVANS, M.A. Cambridge: at the University Press.

PATRISTIC zoology is a charming and interesting subject, particularly when we give the early Fathers fair consideration—that is, to estimate their writings as in advance of the knowledge of their time, and not to compare them too strictly with the science of to-day. The late Rev. H. A. Macpherson has given a short appreciation of Turner as an ornithologist in these pages (1901, p. 376), and with our appetites thus whetted we can the better enjoy the fuller information contained in this volume.

Turner lived in an age when theology was considered the queen of the sciences. Polemical writings on this much hackneyed subject formed the larger portion of his intellectual occupation, as befitted one who had absolutely sat at the feet of Ridley and Latimer, though he preferred quoting Aristotle from the Latin translation of Gaza, the learned papist, who had served under two Popes. Thus natural history formed, even at this time, a meeting-ground for theological doctrinaires, as well as for Mr. Morley's "neutral man of the world." In connection with this translation, Mr. Evans makes a very apposite remark which might well find a place in the "Hibbert Journal": "Exact transcription of a text was considered by no means necessary in those days; consequently we find many observations and explanations inserted in the text of Aristotle and Pliny which had no place in the original."

Like our own illustrious Gilbert White's leaning to a theory of the hibernation of Swallows, so did Turner find it impossible to quite break away from the mythical procreation of the Bernicle Goose. Both sought concurrent testimony, and Turner, dissatisfied with the belief of all the longshore-men of his own

country, and even doubting the testimony of Gyraldus, the historian, relates that he took council of a certain man, whose upright conduct he had often proved, "a theologian by profession and an Irishman by birth, Octavian by name, whether he thought Gyraldus worthy of belief in this affair, who, taking oath upon the very Gospel which he taught, answered that what Gyraldus had reported of the generation of this bird was absolutely true, and that with his own eyes he had beheld young, as yet but rudely formed, and also handled them," &c. This statement should find a welcome by Mr. Tegetmeier, who has for so long been drenched with similar testimony relating to the more than questionable proceeding of the Adder swallowing its young.

It is surprising how much actual observation and frequent acute criticism is contained in this small work, "written in a space of less than two months," by this sorely vexed divine; at one time imprisoned for preaching without a license; again fleeing his country to escape the importunities of other divines during the reign of Queen Mary; and even under Elizabeth, as dean and rector, suspended for nonconformity. Is it presumptuous to imagine that many of these trials might have been avoided, and the knowledge of ornithology very greatly advanced, had Turner been able to quench his dogmatic fire in the still pure stream of nature? For he writes as an original observer, though sometimes he gives what is perhaps a sample of controversial style in other subjects, as, when advocating that Aristotle's Spinus is the Greenfinch, he feels that some may probably object to this identification, and rejoins: "I should like the man who thus objects to me to know," &c. But enough is said on this subject; evidently Turner was a naturalist at heart, but intellectually dominated by a passion for theology.

We thank Mr. Evans for giving us a delightful little volume, which should be read, and then certainly treasured, by not ornithologists alone. There is a literary impression on every page that will charm a competent book-lover, and we hope the Syndics of the Cambridge University Press may see their way to publish further contributions to a knowledge of patristic zoology.

A Monograph of the Tsetse-Flies (Genus Glossina, Westw.), based on the Collection in the British Museum. By ERNEST EDWARD AUSTEN; with a Chapter on Mouth-parts, by H. J. HANSEN, Ph.D. Printed by order of the Trustees of the British Museum.

THIS monograph is devoted to seven species of insects, which represent a genus that has proved a curse to the development of South and Central Africa; was sufficient to cause the ruin of the early Portuguese expeditions in the sixteenth and seventeenth centuries; and wrecked an early Boer trek in 1836 which was migrating from British influence towards Delagoa Bay. Donkeys have been credited with an immunity from the attacks of these flies, and many an expedition has been organised with Donkey transport, with a prospective defiance of the Tsetse and an almost certain bait for Lions. It will thus be seen, that this fly is an enemy of the first importance to be dealt with in the industrial development of a country, which it is now a misnomer to call the "Dark Continent."

The first real contribution to a scientific knowledge of the destructive powers of these flies was made by Col. Bruce, who proved that the deaths of horses and cattle caused by Tsetse were due to the introduction into the blood of the victims of a minute parasite, the *Trypanosoma brucei*, a discovery afterwards confirmed by similar observations made in South America and Algeria. Castellani has also discovered a *Trypanosoma* in the cerebro-spinal fluid of nearly seventy per cent. of the vast holocaust of natives who have recently succumbed to "sleeping-sickness."

In order that the subject should be made entomologically applicable, the Director and Trustees of our National Museum entrusted Mr. Austen, who is well known as a dipterologist, with the task of preparing a monograph of the genus. This he has done in a very thorough manner, and has added a bibliographical list of many books in African literature which refer to these insects. The seven species are also fully and accurately described, and beautifully illustrated by coloured plates. Dr. Hansen, of Copenhagen, has also contributed a valuable paper on "The Mouth-parts of *Glossina* and *Stomoxyx*."



A.

B.

C.

Ring-Dove Hybrid
C. patimba × *C. domesticus*.

Blue Rock (*C. tristis*).
C. patimba × *C. tristis*.

Young of Ring-Dove Hybrid
C. patimba × *C. domesticus*) × *C. tristis*.
(C. patimba × *C. domesticus*) × *C. tristis*.

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THE HYBRIDIZATION OF *COLUMBA PALUMBUS*.

By P. ST. M. PODMORE, F.R.G.S., M.A. (Camb.).

(PLATE VII.)

THE origin of species and their powers of hybridization are subjects of profound interest to all students of zoology. In the typical Lower Miocene beds of Allier and Puy-de-Dôme have been found an enormous number of ornitholites referring to nearly fifty species, including Colymboides, which may be placed in the Colymbidæ, and among existing genera—*Anas*, *Aquila*, *Bubo*, *Collocalia*, and *Columba*, &c. To prove the connecting-links between the Colymboides and the innumerable varieties of domestic Pigeons and wild Doves distributed over the globe would be an undertaking too gigantic for an ordinary lifetime.

Hybridization, so closely allied with evolution, is a study much neglected, and yet of the greatest importance. Zoologists realize this, and Prof. Newton remarked in a recent letter I received : “The subject of hybridism is a most attractive one”; and, again : “We, however, know very little about animal hybrids, and I wish more people would take up the subject.”

The tendency to distribute one’s energies over too vast an area, and the want of definite concentration, might account for much

lack of success. If a number of enthusiasts were to unite their labours, each devoting a lifetime to one particular definite pursuit, and become associated in a school or college for the study of experimental results, science would make some rapid steps in advance.

The very limited area of my own studies, and the dogged determination to prove a personal theory regardless of time and labour, have contributed to my success. My original ambition was to produce a new variety of Pigeon that would not only prove the swiftest flying bird, but also the most useful adjunct for the table. To carry this out I ignored the existing varieties of *C. domesticus*, and turned my attention to the British wild Doves. During the past fifteen years I have reclaimed and bred hybrids from *C. palumbus*, *C. œnas*, *C. turtur*, and *C. livia*. These years of labour have been marked by many failures and disappointments. In addition to the weariness of working alone and without sympathy or recognition, I was confronted with the fact that no ornithologist whose writings I had consulted at the libraries of the universities and learned societies made any mention of the prolificness of Ring-Dove hybrids. Many doubted even the possibility of domesticating and hybridizing the bird, and all were agreed that such a bastard would prove barren and worthless.

Sir W. Jardine, in 'The Naturalist's Library,' remarks :— "For the bastard produce of the common Wild Turtle of the aviary (*C. risoria*) has been proved by frequent experiment to be barren, although the two species from whence it originates appear to be closely allied, and such we have no hesitation in saying would be the event if a cross could be obtained between the Common Pigeon and the Ring-Pigeon, the Wood-Pigeon, or any other species."

Comparing this statement with my own notes on the hybridization of *C. palumbus*, I quote the following :—

"During this year (1899) I became decidedly disheartened, having lost, from different pairs, no fewer than forty young birds, from causes that at the time appeared unaccountable"; and again, on 2nd August, 1899, I wrote : "Eleven days seem about the extent of life permitted to the young of this curious cross-breeding. Both birds that died to-day are well nourished, and bear the characteristics of the Wood-Pigeon, both in shape and

plumage. This is the first time that both birds have lived so long. Last year, in each case, the hen died on the fifth day, and the cock on the eleventh." It happened, however, that just at the time when I was about to give up my experiments success arrived. In September, 1899, I reared a Ring-Dove hybrid that has proved one of the healthiest and hardiest of the Pigeon tribe. On 21st January, 1902, this bird was forwarded to me from 388, Bowery, New York. It arrived in excellent condition, and, notwithstanding nine months' absence, it recognized me again.

My letters, published in the 'Field' during 1897, and my subsequent articles, published by Mr. Upcott Gill, have brought me many interesting replies from different parts of the world. Some ornithologists had reared hybrids to the stage mentioned in my notes (1899), but it was only recently that I received the following :—"I read with pleasure your recent paper on the Wood-Pigeon hybrid. You may care to have the enclosed photograph of a hybrid youngster bred some twelve or fifteen years since. The parents of this bird were a red chequer Homer cock and a very tame hand-reared Ring-Dove hen. The hybrid is a light red chequer, taking after the hen bird in shape and size. I had some six or seven nests, but never more than one egg in a nest was fertile. The bird photographed was the only bird that lived until feathered. All the young were strong and apparently healthy birds," &c.

The photograph enclosed was unfortunately taken from a stuffed specimen, and therefore worthless for publication; but I deeply appreciated the kindness and interest of this gentleman, and invite any readers of 'The Zoologist' to write to me upon this subject.* Photographs of hybrids will always be acceptable, and possibly an exchange can be made.

A reference to the accompanying Plate may induce the most critical to acknowledge the success of my work. C is the hybrid bred September, 1899; B is mated to the hybrid, and the mother of the young bird A, now two months old. B is a long distance flying Homer. The position of the birds permits of comparison. The flight-feathers and general construction of the wings (A)

* Letters addressed "The Zoological Society of London" will receive due attention, or I could arrange interviews between 12 p.m. to 1 p.m. on Mondays at the office.

would suggest both swiftness and endurance superior to B, and unequalled by any existing variety. This photograph was taken from life by Mr. David Eddy of St. Leonards-on-Sea, Oct. 16th, 1903.

Mr. M. Cox, writing from Alexandria, on May 29th, 1897, says : " Some eight years ago we tried hybridizing both the Stock-Dove and Wood-Pigeon with Homers, and succeeded in getting at least two pairs of young, but both pairs died from some unknown cause just after fledging." And, again, another suggests :— " Probably had I given the old birds a plentiful supply of green food with small unripe seed—such food as the Wood-Pigeon would obtain in a wild state—in place of the dry corn on which they were fed, I might have had more success in rearing hybrids."

Both Bechstein and Wallace " know of no result attending the mating of the Ring-Dove with the domestic Pigeon." Such statements as these from recently published books suggested this article to 'The Zoologist.' It may therefore be of interest to describe the history of the Ring-Dove hybrid. It was taken from the nest when only seven days old. I first mixed a little castor-oil in a bread-pill, as I had noted nearly all the birds had died from soured crop. After four hours I fed with a small piece of raw beefsteak reduced to a warm pulp, and administered in the smallest quantities so as to avoid internal irritation. Three hours after I gave freshly crushed lettuce-leaves, followed with warm crushed dari, wheat, and buckwheat, sprinkled sparingly with the grit tonic prepared by Hyde. Early the next morning I gave the bird a sulphur pill, continuing the treatment of the previous day, with the addition of a few seeds of linseed at night, over which boiling water had been poured. I found heated elder-berries were eagerly taken. Guided by the clearness of the eye, the general fledging and development, I continued judiciously the castor-oil pills, sulphur, and linseed, never neglecting fresh lettuce and a few grains of medicinal grit. The bird thrived wonderfully, became very tame, and in a month could fly. When he was three weeks old I fed him upon ordinary seed that had been soaked in warm water for about an hour, and the lettuce-leaves he pecked from my hand. This bird has shown much attachment to me, cooing at the sound of my voice, and flying to my hand or shoulder when summoned

by a signal. He is the most affectionate bird I have ever possessed.

On April 12th, 1900, I made the following note:—"The Ring-Dove hybrid, now over six months old, has mated to a Blue Carrier hen. He was very fierce during the process of mating, and at one time I feared the hen would be pecked to death. His blows were delivered with beak and feet. He used the feet in a somewhat ridiculous fashion, taking short flights, and spurring the hen upon the back. This method of bullying deprived her of many feathers, and caused me ultimately to separate them.

While building the nest the hybrid made many fruitless attempts to place the twigs crosswise over the perch, taking the material in his beak, and lowering the head until it was in line with the breast-bone. A fan-like spreading of the tail was observable after a short flight towards his mate.

The Ring-Dove hybrid had a curious habit of twisting his body playfully in mid-air while flying for exercise in the conservatory. This attitude recalled to mind the remarkable twist of the wild Ring-Dove when turning in swift flight from a suspicious-looking danger spot. When alighting he would open wide the shoulders of his wings, and spread the tail-feathers widely apart. While paying court to his mate the beak was opened and closed several times, and the feathers of the neck raised. The note after mating was uttered very loudly twice, instead of three times, as with the Ring-Dove. The note of the bird is a curious mixture of both parents. When enticing the hen to nest it is somewhat similar to the grating sound of the Stock-Dove, but when paying addresses to the hen he has a curious custom of taking short hops, and then bowing the head, inflating the chest and spreading the tail in mid-air like the Ring-Dove cock."

Prof. Newton, in his admirable 'Dictionary of Birds,' p. 162, says:—"No sharp distinction can be drawn between Pigeons and Doves, and in general literature the two words are used almost indifferently, while no one species can be pointed out to which the word Dove, taken alone, seems to be absolutely proper." Valuing as I do the learning and kind sympathy of this celebrated zoologist, it would be presumptuous on my part to take exception to the above quotation. This I will not do,

but merely state that I personally have observed a marked distinction between the Pigeon and Dove that appears to apply to the wild varieties of America, Australia, and India, &c., as well as to the British species. For example, observe their gestures during the process of mating. A Dove bows the head, inflates the breast, and expands the tail in air. The Pigeon moves the body in circles, and sweeps the ground with his expanded tail. If I were asked to distinguish between a Dove and a Pigeon unscientifically, I should say, "A Dove bows to his lady-love, but a Pigeon turns his back upon her"; or, "A Dove jumps with delight when he is rewarded with reciprocated affection, whilst a Pigeon merely sweeps his mate along the path of love, ignoring her preferences in the matter." Therefore the British *Columbidæ* would consist of Ring-Dove, Stock-Dove, Turtle-Dove, and Rock-Pigeon. My present knowledge of comparative structural anatomy restrains me from drawing scientific distinctions, but possibly mere observations may in course of time become confirmed by facts.

ON SEXUAL SELECTION AND THE AESTHETIC SENSE IN BIRDS.

By H. E. HOWARD, F.Z.S.

PECULIARITIES in the development of the plumage of different birds, together with eccentricities of behaviour during the mating period, which from time to time have come under my notice, have raised doubts in my mind as to the efficiency of sexual selection—in the way in which Mr. Darwin interpreted it—to account for phenomena in the development of plumage, &c., to which it has been applied. Mr. Darwin, in his ‘Descent of Man,’ has paid much attention to the colours of birds, their plumage, and its display at the pairing season; and it is on this latter circumstance that he founds his theory, that both the plumage and the colours have been developed by the preference of the females, the more ornamented males becoming the parents of each successive generation. Many cases of the actual display are given, nearly all of which are in reference to species in foreign countries; those that do refer to this country are on the evidence of one observer, and on species kept in confinement. I therefore propose to give more or less in detail—and it is necessary for the purposes of my argument—cases of actual display amongst some of our native species. I feel convinced that, if it were not for the difficulties inseparable from watching a display so quickly executed, some such display as I am about to relate would be found to be inherent in the males, occasionally perhaps in the females, of all species.

The males then, as I have seen them, have three different ways in which they can display their beauties to the female: they can display the colours of their plumage and any special ornaments which they possess, they can display their vocal powers, and they can display the beauties of their form; this latter perhaps needs some explanation. The most perfect development of plumage amongst all birds is reached in the spring, immedi-

ately preceding actual pairing ; it will then be found that the colours of the feathers and the feathers themselves are in the most perfect condition—a condition which is absolutely essential if the form is to be perfect—and therefore, I think, it will be understood that if a feather is missing, or if the feathers are abraded and not their proper length, the lines as lines of beauty must necessarily be imperfect. This state of perfection is, as a rule, of very short duration ; practically it only exists between the time at which the full development for the season is reached and the time at which the actual pairing takes place—that is to say, during the period in which the display of beauty is essential. I have noticed in the case of many different species—and therefore by analogy the same fact may probably be assumed to occur amongst all—that within a few hours after actual pairing has taken place the colours of the plumage begin to fade ; and it must be common knowledge to those who have in any way interested themselves in birds, that within a few weeks of this time—as a result of the fading of the colours and the abrasion of the feathers—all intrinsic beauty may be said to have vanished. Amongst those birds in whom the power of song is exceedingly developed, in addition to the display of their vocal powers, there is to some extent a display of their plumage. Such an one is the Blackcap (*Sylvia atricapilla*). Two males, as a rule, pursue the female, singing intermittently, the song at this time being far superior to the song at other times ; when very near the female the song subsides to a very beautiful warble, the notes being very rich ; the feathers at the same time are thrown out all over the body, the tail being sometimes carried almost at right angles to the body. The Garden Warbler (*S. hortensis*) acts in much the same way, only in this case all the powers of the bird seem to be even more devoted to song. The male Nightingale hops about in front of the female, flirting his tail, the feathers being thrown out all over the body, the bright patch above the tail showing very strikingly, especially, as is frequently the case, when the display takes place under bushes in a subdued light.

Two or more males pursue the female Chiffchaff (*Phylloscopus rufus*). When near the female the male throws out his feathers all over his body, drops his wings rather loosely, spreads

out his tail, and slowly waves it from side to side. The Lesser Whitethroat (*Sylvia curruca*) acts in much the same manner as the Chiffchaff; the tail is spread out and slowly waved from side to side; the tail, however, in this case is, when spread out, very beautiful.

The Grasshopper-Warbler (*Locustella naevia*) always interested me, as the male always appears to take more care than the males of other species in the display of his plumage. The female walks on the ground; the male follows, spreading out his wings and tail to the full, raising the feathers on his head and back, and throwing them out on his breast, meanwhile flapping his wings slowly up and down, and when in this position he frequently walks along the lowest branches of some small bush. In order to appreciate the effect the display must be seen. The male Stonechat (*Pratincola rubicola*), perched on the top of a whin-bush, jerks his tail almost at right angles to the body, drops his wings in order to show the conspicuous white wing-coverts, and sings vigorously, at times mimicking other birds. The Greenfinch turns from side to side on a branch with wings and tail outspread. The Sky-Lark raises his tail, and bows to the female, the feathers on the body being thrown out in the same manner as those mentioned previously. The Lesser Spotted Woodpeckers (*Dendrocopos minor*) at this period make a great commotion, and their display is very pretty. They spread their wings out to the full extent, and slowly flap through the air; this, I have little doubt, is only part of the display, but the Woodpeckers are a difficult class of birds to watch when courting. The male Blue Tit performs in the same way, extending his wings and slowly flapping about. It is interesting to notice that in these last two cases, in which the display is to some extent different, the wings, when fully extended, are very beautiful, and would make rather an imposing spectacle. Whether the males in these cases are conscious of the beauty of their wings forms the subject of this article. These two cases seem to point to some such conclusion as being probable; yet, in the case of the Grasshopper-Warbler previously cited, the wings are spread out, although there are no special markings to be shown to advantage. The rapid descent of the Snipe, which through specially formed feathers in the tail causes a peculiar vibrating sound, the soaring

and the singing of the Lark, and the dances of various birds, are frequently placed in the same category as the display of plumage; but inasmuch as the Snipe performs his flight, and the Lark soars and sings, after the young are hatched, I do not see how such actions can be connected with the display used only for a short period for the purpose of courtship. It is indeed a difficult matter to discriminate between the display which takes place during courtship and the display at certain periods after the birds are paired. A display of this latter kind can frequently be seen among many different species, especially among the *Columbidae*. Wood-Pigeons, Stock-Doves, and Turtle-Doves raise their tails, lower their heads, distend their throats, and utter a peculiar cooing sound; Finches go through a peculiar dancing movement, but such actions as these must not be confused with the display used preceding pairing. The fact that a large proportion of the examples I have given belong to the *Sylviinae* may cause remark; the reason is, that being specially interested in the various species belonging to this order, and having ample opportunities for watching, I have given them more attention.

The advantages claimed by Mr. Darwin as likely to accrue to the offspring of those males which proved through sexual selection attractive to the females, always appeared to me to constitute a very great difficulty—a difficulty which does not usually appear to have been fully recognized, although, as will be seen from the following passage in the 'Descent of Man,' fully recognized by Mr. Darwin himself. He says:—"Our difficulty in regard to sexual selection lies in understanding how it is that the males which conquer other males, or those which prove the most attractive to the females, leave a greater number of offspring to inherit their superiority than their beaten and less attractive rivals. Unless this result does follow, the characters which give to certain males an advantage over others could not be perfected and augmented through sexual selection." Instances are brought forward to prove that the courtship is of long duration. Such instances are the leks of the Blackcock in Germany and Scandinavia, which last from the middle of March into May, and the leks of the Capercaillie, which last from the end of March to the end of May; in North America the Partridge dances of *Tetrao phasianellus* last for a month or more, &c. No evidence, however,

is adduced to prove that selection by the female is being carried on during the whole of this period, and that such should be the case is highly improbable, for if, as must be so, both sexes are in a fit condition to breed during the whole of this period, considerable and valuable time will have lapsed before any choice on the part of the female takes place; such loss of time, owing to reasons which must be apparent, could only result in being the reverse of beneficial to the species, and contrary to the laws of natural selection. But apart from such a consideration as the above, I cannot call to mind a single instance in which the selection has taken more than a very short period; sometimes it is a day or so, frequently only a matter of hours, and with migratory species the duration of this period appears to vary to some extent with the condition of the seasons. For these reasons I am convinced that the selection is usually of short duration, and, this being the case, it will readily be seen what a difficult matter it becomes to understand in what direction the young of those individuals that were first paired could gain any advantage; food being as plentiful for the late as the early broods. Whether, amongst those species which rear two or more broods, the fact of one pair of individuals commencing to breed a few hours before another could be of any advantage is very doubtful; on the other hand, a very large number of species do not rear two broods. I fully admit that an advantage, however small, when maintained over such a vast period, must be effective, but in this case I cannot see where the advantage lies; and, on the contrary, it might frequently happen, owing to adverse climatic conditions at the time when the young are hatched, that the young of those individuals that were the later breeders might thus have an advantage. Mr. Wallace, however, has pointed out an objection which makes it almost impossible to believe that sexual selection can act in the way in which Mr. Darwin interpreted it. Briefly it is this: that the extremely rigid action of natural selection must render any attempt to select mere ornament utterly nugatory, unless the most ornamented always coincide with the fittest in other respects; and if such is the case, then no other kind of selection is necessary. The force of such an objection will at once be seen.

In the same work Mr. Wallace gives his reasons for regarding

the display of the male solely as a sign of vigour and health, and thereby attractive to the female, and finally denies any aesthetic sense to the female. He says :—“ We have thus no reason for imputing to her any of those aesthetic emotions which are excited in us by the beauty of form, colour, &c., or the still more improbable aesthetic tastes which would cause her to choose a mate on account of minute differences in their forms, colours, &c.” Here I am unable to follow him. As natural selection continually acts for the future good of a species, it is evident that in order to attain this end a healthy female is as essential as a healthy male; and therefore those females which are first ready to breed, and before whom the males display their plumage, must be in a healthy and fit condition ; if the reverse were the case, and an unhealthy female had as great a chance of securing a mate as a healthy one, then such a theory as Mr. Wallace puts forward would become untenable. But the evidence in support of such a supposition is strong. The females of all the migratory species arrive after the males, the interval between the sexes varying in different species. The arrival of the females is spread over some days ; at first they come sparingly, but later increase rapidly. Among the Ducks, a female desires to choose a mate ; to her all the drakes pay homage, regardless of other females round, who in their turn are apparently disinterested spectators of the display of the males. Natural selection therefore has probably implanted in the female a faculty whereby she becomes conscious of the fact that she is in a healthy and fit condition to breed. According, then, to Mr. Wallace, in order to obtain the same result attained in the female, natural selection has caused the males to go through an elaborate display, and in addition has developed in the female the power of selecting the most vigorous male. Surely this is a fallacy. It would have been a far more simple process, and one more in keeping with the working of natural selection, as we know it, if the same power developed in the female had also been developed in the male ; and supposing such were the case, then, no explanation is afforded by such a theory for the display. There is another objection directly arising out of this theory, which alone makes it almost inconceivable that colours, &c., could have been developed in this manner. It is this : that if all plumes, colours, song, and form

are due to a surplus vital energy, and their development to the preference shown by the female for the healthiest male, then how is it possible that health and vigour alone could have developed that wonderful harmony of colour, &c., which we call beautiful? Birds might have developed into ungainly creatures, our most beautiful songsters might have developed shrieks; and yet, if Mr. Wallace's theory is accepted, such a development as I have indicated would have served the purpose of natural selection equally as well, in that it would have been just as much a sign to the female of health and vigour in the male. From the beauty of the colours previously referred to, and from the harmony with which variations tend to develop, it is evident that there is in nature some direct power continually at work fostering and developing all that is beautiful. As touching on the question of song, it is a curious fact that I have never heard the male Black-cap while mating attempt to mimic other species; yet, during July, I have heard him mimic—and mimic the Nightingale exceedingly well. It must be as great—probably a greater—effort on the part of a bird to mimic than to sing its natural song, and therefore, in this case, it seems to point to some other power, beyond mere vigour and health, immanent in the bird, which gives it control over its vocal powers, and in this respect it supports my general argument.

What, then, is the explanation of this display? For some years I have been impressed with the exceeding variation in plumage, and song, amongst individuals of the same species, and I have come to regard these variations as coincident with the age of the individual. I cannot call to mind any instance amongst our common species in which this variation does not to some extent occur. A few examples will illustrate my meaning. The vinous tint on the breast of the Whitethroat varies considerably; the older males possess it in a marked degree, while in some of the younger birds it can with difficulty be traced; the older males also have brighter grey on the head and neck, and much more intense fawn on the flanks. The male Grasshopper-Warbler is generally described as having dark spots on the neck; the older males do not possess these spots, but have instead a rich fawn-colour; they also have a much purer white on the belly than the younger bird.

The old Blackcaps have a much finer song than the younger birds, and in addition have much finer plumage ; the feathers on the belly are a much purer white, the back is more olive-green, and the eyelid is much whiter. The Wood-Warbler shows very great variation, but here the colours are so delicate that a description is almost impossible ; the different shades of green, however, are much more intensified in the older birds. The Stonechat affords an excellent illustration, especially as several pairs are frequently close together, and allow of comparison. As a rule the feathers of the back are edged with black ; sometimes, in birds of the first year, they can hardly be said to show any black at all. In the old birds, however, the back may be said to be as black as the head, and in addition the rufous colour of the breast is much deeper, and the belly a much purer white. The Brambling in winter is another good illustration, because the different grades of colouring are so marked ; the old males have the head and back a much deeper black, and the breast a more intense red. The old male Yellowhammers are marked with a much more intense yellow, especially on the head. In many cases also the feathers are longer, consequently the form is more perfect. A development of the same kind takes place in the song of many birds ; the Blackbird is most noticeable, and the attempts of the younger birds can be easily picked out, such attempts being often very feeble. Here, then, we have firm ground on which a theory can be based, *i. e.* that the tendency for the colours to become more intensified, and the plumage and song more perfect, is proportionate to the age of the individual. Such a tendency could not exist without motive on the one hand, and support on the other ; this support is, I believe, supplied by aesthetic sense. If, as a bird matures, it becomes more beautiful, what reason, it may be asked, can there be for any display ? What necessity for any other power ? I wish, however, to show that such beauty is not solely dependent on age, but must necessarily be subservient to some other power. Those who have studied sexual selection amongst any species will understand how difficult it is to happen to be present when the final selection takes place, and therefore to place on record specific cases as proof of the most perfect males being chosen is a most difficult task. I can, however, in the case of

the Stonechat, affirm that I have seen the finest old males first paired. Under such conditions, where the older and more beautiful males prove more attractive to the females, any theory which is primarily based on supposed advantages gained by a male, which, having through some slight variation proved more attractive, is first paired, and which includes the transmission of such a variation to the offspring, making them in their turn more attractive to the females, inasmuch as such offspring in competition with more mature males would not be first selected, becomes untenable. I have already given my reasons for concluding that all the males which are competing for a female are in an equally healthy and vigorous condition ; natural selection, therefore, at this point, as far as the future of the species is concerned, has done its work, and beyond this point sexual selection comes into play for the development for beauty only. In proportion as each successive season a male develops and sees the advantages that accrue from such development, so will the desire for further development increase ; when the limit of such development is reached, variations will tend to occur—I use the word variation for want of a better ; exceeding development expresses my meaning more clearly—such variations will be transmitted to the offspring, and will appear and be developed as the young matures.

Very little appears to be known concerning the age at which a bird commences to breed ; this much, however, we do know—that there are yearly great numbers of individuals that do not breed, and the evidence seems to show that such individuals are immature. We have then a gradual process of development, amongst the healthy individuals of a species, due to the action of inherent æsthetic sense in combination with a tendency for the plumage to develop with age, on exactly similar lines—and that this development should be as perfect as possible, a careful display of the male is essential.

One of the arguments used against Mr. Darwin's theory of sexual selection was that it was improbable that females in different places should have chosen the same variation; but here such an argument could not be used, inasmuch as variations are due to continuous laws of growth, and only developed by inherent æsthetic sense. The plumage of the female develops

with maturity in the same manner as that of the male. In the female, however, the colours are, as a rule, duller, and proportionately as they are duller, the variations at different stages of maturity are less striking ; in addition to this the plumage is not developed to such an extent, and consequently the form of the bird is less perfect. These facts appear to support my theory. The tendency to develop is there, but, inasmuch as the males court the females, and not the females the males, the rivalry, which on this account exists amongst the males, is unnecessary among the females ; consequently the power, which acts as a stimulant to further development of the plumage of the male, is absent in the case of the female.

Mr. Darwin, in his 'Descent of Man,' mentions various cases in which the females are brighter than the males, and concludes that in these cases the order is changed, and that instead of the females selecting the males, the males select the females. In so far as it is due to the selection of one sex by the other being reversed, I agree with him ; but, as I have previously pointed out, I differ from him in the manner in which sexual selection works.

It will be seen, then, that my suggested explanation of the display and selection differs very materially from others ; more especially in this fact, that it is not based on direct advantages gained by the offspring of the most successful males, but on the natural development of inherited laws of growth ; and, in addition, it regards the action of sexual selection, together with this tendency to develop with age, solely as a means for the development of beauty. In contemplating animated nature we see a development of beauty so marvellous that we can only conclude that such a development must have been equally as important in the history of the world as the development of the fittest in other respects.

We see in man the æsthetic sense developed to the highest degree, and if we regard that higher idea of creation, which the word Evolution embraces, as applicable to man, then we must look upon this sense as having been dependent on a very modest origin. To deny, therefore, to the lower animals a sense in proportion to their development seems to me inconsistent with the whole theory of evolution. The origin of this sense, and of beauty, remains—despite the lengths to which the Weismann

conception of natural selection has taken us—as great a mystery as ever. Creative power—that power which evolution reveals at every turn—can alone supply an answer. It is difficult to understand how such a condition of thought could have arisen, which, while admitting the principle of evolution, denied the possibility of creative power. Such questions as have here been discussed, together with others of equal interest, can only be solved by the closest study of animal life. By life I do not mean death. This may sound paradoxical, but it is none the less true; for, until it comes to be recognized that the knowledge of the working and development of the mind of an animal is of greater importance than the knowledge of the body—is the human mind considered of little importance?—the solution of such questions will remain in doubt, and no progress will be made towards supplying an answer to the great mystery alluded to in the following beautiful lines:—

“ Flower in the crannied wall,
I pluck you out of the crannies;
I hold you here, root and all, in my hand,
Little flower—but if I could understand
What you are, root and all, and all in all,
I should know what God and man is.”

SOME NOTES OF RARE BIRDS FROM KENT AND SUSSEX.

By N. F. TICEHURST, M.A., M.B.O.U.

THE past twelvemonth has been so remarkable in its production of rare birds in this district (*i. e.* S.W. Kent and S.E. Sussex) that it seems well worth while to bring together all the records that I have been able to collect during that time.

It would seem that the conditions were particularly favourable last autumn for staying the birds on this coast during their migration, and, though I was unable myself to make many observations, I certainly heard the birds passing over at night in apparently greater numbers than usual. Wagtails, both Yellow and Blue-headed, as well as the Pied, lingered longer than usual, and several Pied Flycatchers and Black Redstarts were observed. Of the waders, certainly more than the usual numbers of Little Stints, Curlew-Sandpipers, Knots, Reeves, and Dotterel—all rather rare birds on this coast—were seen and obtained.

In the following list will be noticed the occurrence in this district of no fewer than three species for the first time in this country, *viz.* the White-spotted Bluethroat, the Black-headed Wagtail, and the Black-winged Pratincole. For the majority of the specimens I am indebted to Mr. Bristow, the well-known taxidermist of St. Leonards-on-Sea, for permission to examine and record them. Where they have been previously recorded, I have given the reference, so that there may be no confusion if any future workers want to make use of the records.

*August 8th, 1902.—Aquatic Warbler (*Acrocephalus aquaticus*), male, shot on the military canal at Winchelsea.*

*11th.—A female shot at the same place. This pair, the fifth and sixth examples that have been recorded in this country, were exhibited at the British Ornithologists' Club on Oct. 22nd, 1902, by T. L. Bonhote, Esq. (*vide* Bull. B. O. C. xci.).*

September 22nd.—A young male Rustic Bunting (*Emberiza rustica*) shot at Westfield. It was seen by my brother in the flesh, and exhibited by me at the British Ornithologists' Club, Oct. 22nd, 1902 (*vide Bull. B. O. C. xci.*). This is the second time this bird has occurred in Sussex, and the fourth time in this country.

October 6th.—A fine adult male of the White-spotted Bluethroat (*Cyanecula wolfi*), picked up dead under the lighthouse at Dungeness. It was exhibited by Mr. M. J. Nicoll at the British Ornithologists' Club on Oct. 22nd, and is probably the first authentic occurrence of this race of Bluethroat in this country (*vide Bull. B. O. C. xci.*; *Zool. 1902*, p. 464).

14th.—A young Glossy Ibis (*Plegadis falcinellus*) shot at East Guldeford in Romney Marsh.

25th.—A fine adult male Glossy Ibis (*P. falcinellus*) shot between Pevensey and Bexhill. A young male Spoonbill (*Platalea leucorodia*) was also shot on this date at Broomhill, in Romney Marsh. It was a very small bird. Mr. Chapman, of Rye, to whom the bird now belongs, informs me that it was shot just on the Sussex side of the Kent ditch. On this day also several Spotted Crakes were seen by a party of sportsmen near Rye, and one (a male bird) was obtained.

29th.—An immature female Water-Pipit (*Anthus spipoletta*) shot at Rye Harbour by Mr. M. J. Nicoll, and was exhibited on his behalf at the British Ornithologists' Club by Mr. Howard Saunders. It was a remarkably small specimen. This is the seventh record for this species in Sussex (*vide Bull. B. O. C. xcii.*).

November 7th.—An immature female Merlin (*Falco æsalon*) was shot at Ninfield by a man named Sergeant. It is now in my collection.

8th.—An immature Glossy Ibis (*Plegadis falcinellus*) shot between Pevensey and Eastbourne. This is probably the bird seen by Mr. A. H. Machell Cox at Pevensey Sluice on Nov. 6th, and reported by him in the 'Field' of Nov. 22nd.

12th.—A male Firecrest (*Regulus ignicapillus*) shot by Mr. M. J. Nicoll at Camber.

December 12th.—A female Kite (*Milvus ictinus*) trapped by a gardener between Battle and Robertsbridge; a second bird was also seen.

24th.—The second Kite (a male bird) was shot near Whatlington, and therefore had not wandered far from where its mate was trapped. The female is now in the collection of Fleetwood Ashburnham, Esq., of Broomham Park.

26th.—A female Two-barred Crossbill (*Loxia bifasciata*), shot by a Mr. H. Dale at Woodchurch, in Kent. It was a dull grey-brown bird, with a slight tinge of yellowish green on the flanks, and a poor specimen from being kept a long time before being skinned. It was exhibited on my behalf at the British Ornithologists' Club (*vide* Bull. B. O. C. xciv.).

February 3rd, 1903.—A male Bulwer's Petrel (*Bulweria bulweri*) picked up dead on the beach near Beachy Head after a succession of strong S.W. gales. It was seen by me in the flesh, and had evidently been dead several days. It was exhibited on my behalf at the British Ornithologists' Club (*vide* Bull. B.O.C. xciv.). This is only the second time that this Petrel has occurred in the British Isles.

April 27th.—An adult male Hen-Harrier (*Circus cyaneus*) shot at Fairlight.

May 13th.—An adult male Black-headed Wagtail (*Motacilla feldeggii*) and two males of the Grey-headed Wagtail (*M. borealis*) shot near Willingdon, Sussex. This is the first occurrence of the former in this country (*vide* Bull. B. O. C. xcvi.). An adult male Peregrine (*Falco peregrinus*) was also shot on Beachy Head on this date. Two others (both males) were also shot this year early in March at the same place.

21st.—A nest and five eggs of the Blue-headed Wagtail (*Motacilla flava*) was found by a man named Potter in his allotment-garden at Winchelsea. There were two pairs of birds seen, and it is to be hoped that the other pair hatched off successfully. It was in this same garden that the nest was found in 1901, as recorded in 'The Zoologist' (q. v. p. 389). The above nest was exhibited by me at the British Ornithologists' Club (*vide* Bull. B. O. C. xcix.).

30th.—A male Collared Pratincole (*Glareola pratincola*) shot by Mr. Southerden at Jury Gap, in Romney Marsh. It was seen by me in the flesh, and exhibited at the British Ornithologists' Club (*vide* Bull. B. O. C. xcix.). This is probably the first occurrence of this species in Kent.

June 1st.—A male Black-winged Pratincole (*G. melanoptera*) shot by Mr. F. Mills near Dungeness Point. This is the first occurrence of this species in the British Isles, and is recorded by me in the B. O. C. Bulletin, xcix.

These two Pratincoles are now in the collection of Mr. Fleetwood Ashburnham, at Broomham Park.

19th.—An adult female Squacco Heron (*Ardea ralloides*) shot near East Guldeford, in Romney Marsh.

22nd.—A second adult Squacco Heron (*A. ralloides*) shot between Icklesham and Winchelsea. These two specimens are the third and fourth that have been procured in this locality within ten months.

July 19th.—A female Black-winged Pratincole (*Glareola melanoptera*), in rather worn plumage, shot near Rye (cf. Zool. ante, p. 392).

August 24th.—An adult female Hobby (*Falco subbuteo*) shot at Ninfield. It was well on in the moult.

29th.—An immature female Solitary Snipe (*Gallinago major*) and two Green Sandpipers (*Totanus ochropus*) shot at Brede. During this month a number of Black Terns (*Hydrochelidon nigra*) were seen on the River Rother above Rye, and five were procured, all adult birds, which is rather unusual for this time of year, old birds being generally seen during the spring migration only. An Avocet (*Recurvirostra avocetta*) was also shot between Rye and Lydd.

September 11th.—An adult male and an immature Bluethroat (*Cyanecula suecica*) shot near Pett.

15th.—A second immature male Bluethroat shot at Pett.

In addition to the above record of the nesting of the Blue-headed Wagtail, I have to record the attempted nesting of Montagu's Harrier (*Circus cineraceus*), and the successful nesting of the Peregrine (*Falco peregrinus*).

The Harrier returned this year to its former haunt (which there is no need to further particularise) for the first time for ten years; but, as happened then, no sooner had incubation commenced than she went the way of all "vermin." So far as I know, the cock escaped, and it is to be hoped will succeed in finding a mate and returning next year, when perhaps better luck may attend them.

The Peregrine nested at a spot where, so far as I am aware, no Peregrine has ever nested before—at any rate, there is no record of the fact; but for obvious reasons the exact locality need not be made public. They successfully reared four young ones, and all six birds were seen on the wing on many occasions. Unfortunately two of the young were shot by a prowling gunner, but the others soon after took their departure. Having therefore been once successful, I trust they will return and rear full broods every year. At any rate, whether they do or not, steps will be taken to secure their safety both at this spot and on Beachy Head, where they evidently are in sore need of it.

ON THE NORTHERN BREEDING RANGE OF THE
DARTFORD WARBLER, *SYLVIA UNDATA* (BODD.).

BY THE REV. F. C. R. JOURDAIN, M.A., M.B.O.U.

MR. H. E. FORREST's most interesting note (*ante*, p. 349) on the breeding of this species in the neighbourhood of Ludlow confirms the supposition that the northern breeding range of *S. undata* has hitherto been imperfectly known, and that further research may result in the discovery of new breeding haunts. Such a skulking and inconspicuous species is always liable to be overlooked even in well-worked localities. At the time of the publication of the fourth edition of 'Yarrell' it was not known to breed north of the Thames in any county except Middlesex. Since that time Prof. Newton has recorded his observations on its breeding habits in East Suffolk ('Ootheca Wolleyana,' p. 344, &c.), and Mr. Howard Saunders, in the second edition of his 'Manual' (1899), gives the following account of its distribution in the breeding season:—"It is known to breed in nearly all the southern counties from Cornwall to Kent inclusive, especially in Hampshire (and the Isle of Wight), Surrey, and Sussex; sparingly in the valley of the Thames, and perhaps in some of the midland counties, while it has been observed in Cheshire, and undoubtedly nests in Suffolk and Norfolk." (It will be seen from the above extract that Mr. C. Dixon's account of the nesting of this species in the Rivelin Valley near Sheffield is not considered to be authenticated. No subsequent observer has, as far as I am aware, met with it in the neighbourhood.)

Mr. Forrest's information places the fact of its having bred in Shropshire in 1902 beyond dispute, and it will be seen that there is every reason to suppose that it has also nested in the neighbouring county of Stafford. It is included by Dr. McAldowie in his 'Birds of Staffordshire' (1893) as "occurring on Cannock Chase," on the authority of Mr. Yates, but no details are given, and until recently no confirmatory evidence was forthcoming.

However, last year I was informed, by Mr. J. Henderson, of Hinchley Wood, Mappleton, who lived for many years at Tixall, on the borders of Cannock Chase, that in or about 1870 he met with this bird for the first time, and found a nest with eggs among some bushes not far from the Shugborough Road. Having a butterfly-net in his hand at the time, he managed by a lucky stroke to capture the sitting bird, and took both bird and eggs to a friend, Mr. Mayne, who was naturally incredulous on being told that a Dartford Warbler's nest had been found, but the production of the nest, and, finally, the old bird, effectually convinced him. Mr. Henderson is a keen observer of birds, and has a distinct recollection of the peculiar throat and chest coloration which is so characteristic of this species at close quarters. Unfortunately he did not realize the importance of his capture, and took no steps to preserve the skin, or to publish any account of the occurrence.*

The most northerly locality where specimens of this species have been actually secured is Melbourne, in S. Derbyshire, where a pair were shot during the hard winter of 1840 from the top of a furze-bush half covered with snow (J. J. Briggs, *Zool.* p. 2486). F. B. Whitlock hazards the suggestion that these birds may have wandered from Charnwood Forest, but it is at least equally likely that they made their way down the gradual descent of the Trent Valley from Cannock Chase to Melbourne. It was by this route that the Red Grouse (which almost certainly came from the Chase) made their way down to the low-lying country between Tutbury and Derby in the winter of 1860-61, and heavy snow on the moors of North-west Derbyshire frequently drives them down the Dove Valley. Moreover, according to Mr. M. Browne, the Dartford Warbler has not occurred in Leicestershire.

That this bird wanders in winter to places remote from its usual haunts has long been known, and probably, like the Stonechat, its numbers are much diminished by a spell of severe weather. I have myself seen a pair within the precincts of the

* Mr. Henderson's name will be familiar to students of Messrs. Harvie-Brown and Buckley's 'Fauna of Argyll and the Inner Hebrides,' as former essee of the shooting of Tiree, and a contributor of ornithological notes to that volume.

city of Oxford—hardly the place where one would naturally expect to meet with it—and other instances are on record of its turning up in unlikely places.

It is satisfactory to know (as Mr. Forrest informs me) that the Ludlow colony consists of two pairs of birds, and that one pair managed to bring off their young.

Although much reduced in numbers of late years in many of its old breeding haunts in the south, I am glad to say that in one locality, at any rate, it is still an exceedingly common bird, and ten or fifteen pairs may be seen in a day; but up to the present the spot has remained practically unknown to egg-collectors, although a few birds are annually taken for cage purposes.

BIRD-LIFE ON AN INDIAN MARSH.

BY GORDON DALGLIESH.

THE marshes of Bengal are large tracts of land almost entirely covered with water after the rains, but which dry up to a certain extent in the hot weather, leaving behind deep pools, which are covered with beautiful water-lilies and bordered with rushes. Rice is grown around the edge and in the shallow water, and affords both food and shelter to all kinds of wildfowl.

A favourite haunt and shooting-ground of mine was such a marsh that was situated close to the Tirhoot State Railway. Standing on a road that ran alongside the marsh, at sunset, one heard the whistle and rush of many wings, caused by the huge flocks of Duck which came to feed on the rice. The natives used to snare these Duck and other birds by stretching long nets hung between two poles, and on dark nights the birds, flying low over the water, got entangled in the meshes, and were so found in the morning, when they were taken away and sold alive in the bazaars.

The commonest of all birds on these marshes were the Coots (*Fulica atra*), which simply swarmed in thousands, a few pairs remaining to breed in the hot weather. A great enemy to these birds was Pallas's Fishing Eagle (*Haliaëtus leucocoryphus*), and many a Coot have I seen carried off by this robber to feed two voracious young in a nest situated in a neighbouring simul-tree.

One of the handsomest of all the migratory Ducks was the Red-crested Pochard (*Netta rufina*). A curious fact I noticed about this bird, was, that one always invariably came across large flocks consisting only of males, and small flocks of only females, though of course at times they became mixed.

Keeping very much to the shelter of the rushes, and never wandering far from them, were small flocks of White-eyed Pochards (*Nyroca ferruginea*), which was, with the Gadwall (*Chaulelasmus streperus*), the commonest Duck on this marsh.

As a rule they were tame compared with other fowl, and one was pretty certain of bagging a couple or so out of every flock that came across. One summer I kept a number of these Duck in an aviary, in the hope that they would breed, but in this I was disappointed.

On several occasions I came across the pretty little Tufted Duck (*Nyroca fuligula*), but for some unknown reason they were very irregular in their migrations, and in some years were almost common, while in the next year perhaps not one would be seen. When rising off the water they skim the surface like a Coot, and dive rather than fly when danger threatens them.

The Pintail (*Dafila acuta*) was the wariest of all the Ducks. After firing a shot they would rise up right out of range, and, after circling round once or twice, would fly away, to return no more until all was quiet again. During the cold season of 1897-98 these Duck came in such enormous flocks as to cause considerable damage to the rice-crops. I once or twice came across the Shoveler (*Spatula clypeata*), and on those occasions found it far less shy than many other fowl, and when wounded did not resort to diving. The flesh of the Shoveler is always said to be rank and fishy in flavour. I certainly did not find this the case; the ones I ate were delicious.

Both the Cotton Teal (*Nettopus coromandelianus*) and small Whistling Duck (*Dendrocygna javanica*) were common and resident on the marsh. In some places I have seen the latter bird in flocks of hundreds; indeed, it was a marvel to me where they all came from. Both these species are good divers, and are seldom recovered if "winged." Early one morning in December I came across a couple of Barred-headed Geese (*Anser indicus*) feeding in the stubble.

I remember one bitterly cold morning in December arriving at the marsh for a shoot at 4 a.m. The day was just dawning, and clouds of mist were rising off the water. The first bird I noticed was a Great Crested Grebe (*Podicipes cristatus*), which looked twice its real size in the weird grey morning light. After chasing it about the water for an hour and a half (trying to get within range, which I could not do on account of its repeated dives), I bagged it—a fine male. This was the only one I got. There were two more, which I tried for another day, but failed

to obtain. The diving powers of these birds are astonishing. I know of no bird that can touch them in this (except, of course, the big sea-divers), though Hume says the Smew dives even better. I doubt it.

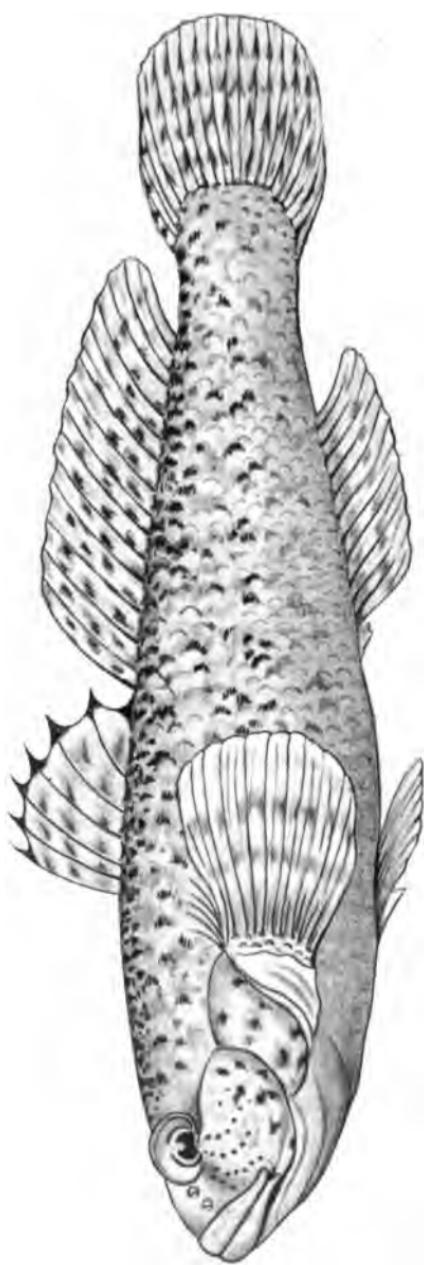
The Little Grebe (*P. albipennis*) was a common resident, and bred during July and August. The Purple Moorhen (*Porphyrio poliocephalus*) was common, and in August constructed huge nests of paddy or rice. The pretty little Water Pheasant (*Hydrophasianus chirurgus*), whose plaintive mewing cry must be familiar to all Bengal sportsmen, was plentiful, and made a nest amid the lotus leaves and rice.

Fishing near the shallows were numerous species of Terns, the most common being the Whiskered Tern (*Hydrochelidon hybrida*), which bred somewhere near at hand. Feeding on the mud were numerous small Waders, as Sandpipers, Black-winged Stilts, &c. Once or twice I have shot Curlews, but they were very shy and difficult to approach, and always had a sentinel posted to warn them of any danger or suspicious object.

Three species of Snipe are found here: the Common Snipe (*Gallinago cœlestis*), the Pintail (*G. sternura*), and the little "Jack" (*G. gallinula*).

One of the most familiar of all Indian birds is the little Pond Heron, or Paddy Bird (*Ardeola grayi*), and is to be found quietly fishing by nearly every piece of water. I once had the good fortune to secure the Great White Heron (*Herodias alba*). I never came across another. It was by this marsh that I first made the acquaintance of the Bittern (*Botaurus stellaris*), and narrowly escaped having my hand run through with its powerful bill, when I went to pick it up after shooting, before it was dead.

Kingfishers of four species are met with, namely, our own *Alcedo isspida*, the White-breasted Kingfisher (*Halcyon smyrnensis*), the Stork-billed (*Pelargopsis guirial*), and Pied Kingfisher (*Ceryle varia*). The last-named species catches its prey like a Kestrel, first hovering over it, and then, with a quick downward plunge, securing the fish, which it swallows while on the wing.



THE GIANT GOBY; *Gobius capito*, C. & V.

THE GIANT GOBY (*GOBIUS CAPITO*, C. & V.).

By FREDERICK PICKARD-CAMBRIDGE, F.Z.S.

(PLATE VIII.)

IN 'The Zoologist' for 1899 (p. 429) an editorial note refers to the discovery of this magnificent fish on the coast of Brittany by Mr. G. A. Boulenger, a species which had hitherto been taken only in the Mediterranean. It was remarked by the captor at that time that in all probability this Goby would also be found in the South of England, presumably off the coast of Cornwall; for Couch, who lived at Polperro, spoke of *Gobius niger* attaining the length of 9–10 in., and being confined to rock-pools. The true *G. niger*, as usually identified by authors, however, never attains a greater length than 5 in. With the object of finding out if possible what this big Goby might be, at Mr. Boulenger's suggestion I hunted the rock-pools in the vicinity of Port Scatho, between Falmouth and Fowey, in Cornwall, where I happened to be during August and September of this year.

The result was highly gratifying, for the Giant Goby was there in plenty, both large and small. It is certainly strange that Couch should not have distinguished between this fish and the Black Goby, for the same characters distinguish it from this species as serve for a distinction between the Black Goby and the Rock Goby (*G. paganellus*); and Couch was well acquainted with the distinctive characters in the latter case. Couch's figure of the Black Goby (*G. niger*) is obviously taken from one of these large rock-pool Gobies.

The discovery of this new British fish in Cornwall shows how much there is still to be done in identifying species of fish and ascertaining their distribution, apart from the question of their habits and foodstuffs. Messrs. Holt and Byrne have published a most excellent monograph on the British Gobies, but unfortunately the recognition of the Giant Goby in British waters was not made in time for its inclusion in that work, only issued at the beginning of the year.

[We have to thank the publishers of the 'Field' for their courtesy in lending us the block to illustrate this paper.—ED.]

NOTES AND QUERIES.

MAMMALIA.

Lesser Horseshoe Bat (*Rhinolophus hipposideros*) in Carnarvonshire.—As the distribution of the Lesser Horseshoe Bat is still imperfectly known, it may be of interest to record the occurrence of the species in Carnarvonshire. I have recently seen an example which was taken on Sept. 24th near Tal-y-Bont. The Bat was hanging with about a dozen others of the same species to the roof of a cave on the bank of the Afon Dulyn, a tributary of the Conway.—**CHAS. OLDHAM** (Knutsford).

Blind Rats and Mice.—In cutting peas in one of my fields here on August 8rd, five young Rats, estimated at about a month old, were killed, and a short distance off a pregnant doe Rat, which was probably their mother. The doe and one of the young ones were in normal condition, but the other four were blind of both eyes; in one instance one of the eyes was gone, and the lids had coalesced, requiring considerable force to separate them, showing the injury was of some days' standing. The only explanation I can suggest is that this was the work of a pair of Red-backed Shrikes which were nesting in an adjoining hedge, in the same way that Magpies and Jays treat Rabbits; but the pea-haulm afforded excellent cover, and it is remarkable that within the few days which can only have elapsed since the young Rats first left the nest the butcher-birds should have succeeded in pecking both eyes of four individuals, which subsequently escaped them. The only other explanation that occurs to me is to ask whether there is any beetle or other invertebrate of any sort known which attacks the eyes of nestling small mammals? One occasionally meets with an adult Rat blind of one eye, but that I have always attributed to one or other of the many accidents that Rat-flesh is heir to—such as wounded by man, by shot, or stick, or fighting one of its own species. At my old home at Great Marlow I met with hundreds of Mice blind of one or both eyes. Many years ago an Iceland pony which I imported went blind, and it seems just possible that the form of ophthalmia from which he suffered may have been contagious, and

have communicated itself to the Mice. Certainly at first the blind specimens were all captured in or round the stables, but later they were obtained from all parts of the garden, and the house itself; but no other Horse or other animal suffered, and I am not sure of the date when I first began noticing these blind Mice.—**ALFRED HENEAGE COOKS.**

A V E S.

British Examples of the White-spotted Bluethroat.—Under this heading (*ante*, p. 28), Mr. T. H. Nelson writes that the first British-killed example of this Bluethroat was obtained at Scarborough, and described by the Rev. J. G. Tuck (*Zool.*, June, 1876, p. 4956). On referring to this note I find that a specimen of the bird was picked up under the telegraph-wires near Scarborough on April 12th, 1876. It was described by Mr. Tuck as a female bird, and containing well-developed eggs. If Mr. Nelson will refer to Dresser's 'Manual of Palæarctic Birds' (1902), p. 62, he will find that Mr. Dresser, in describing the female of the Red-spotted Bluethroat, says that the female and young resemble those of the White-spotted form, "there being no character by which they are distinguishable." At the end of his note Mr. Tuck says that only one other individual of this type is recorded as having been met with in Britain. I may as well mention here that this was the example supposed by Mr. Hancock to have been taken near London in May, 1845. It was, however, purchased from a dealer whose traffic with Holland was notorious (*cf.* Saunders's 'Manual of British Birds,' 1st edit. (1889)). I think I am therefore justified in saying that the bird I exhibited at a meeting of the B. O. C. last October, and recorded in 'The Zoologist,' is the first authentic British example of the White-spotted Bluethroat.—**MICHAEL J. NICOLL** (10, Charles Road, St. Leonards).

Tawny Pipits (*Anthus campestris*) in Sussex.—At the one hundredth meeting of the B. O. C., held on Oct. 21st, I exhibited two pairs of Tawny Pipits, which I shot at Rye Harbour, in Sussex. I obtained the first pair on Sept. 22nd; they were feeding on a stretch of swampy ground which had just been left bare by the falling tide, in company with a large flock of Meadow-Pipits. Their note was a soft double chirp, not unlike that of a Linnet. On Sept. 24th, at the same place, I met another pair, which, like the former, were in immature plumage, though all were just beginning to get a few new feathers on the upper parts. They appeared very pale in coloration when alive, and walked very upright. There have been about nineteen previous records of this species in Sussex, in which county most of the British examples

of this bird have been taken. Probably numbers of others have been overlooked, as amongst the large numbers of Meadow-Pipits (*Anthus pratensis*) which appear on our south coast during September it is quite likely there are many rare Pipits such as *A. cervinus* every year.

At the same meeting of the B. O. C. I exhibited an adult male Great Reed-Warbler (*Acrocephalus turdoides*), which I shot on Sept. 25th on a disused brickfield close to the West St. Leonards Railway Station. I first saw it feeding at the top of some sallow-bushes, but on finding itself observed it became very skulking, and it was not till an hour later that I rediscovered it in a bed of nettles, and shot it. The tarsi and toes of this specimen were dark slate-grey, and its gizzard contained earwigs. As Mr. Howard Saunders remarks ('Man. Brit. Birds,' p. 88), it is curious that this species, which is so common on the Continent, should so seldom visit our shores. Its size alone would at once attract attention. The bird I shot uttered no note, but it was plainly visible at a distance as it hopped about the bushes, and looks like a very large Garden-Warbler. This is the fifth authentic record of this bird in Britain, and the first in Sussex, for although Mr. Borrer ('Birds of Sussex,' p. 64) mentions a bird having been seen which was believed to be this species, it was not obtained.—M. J. NICOLL (10, Charles Road, St. Leonards).

Goldfinch (*Carduelis elegans*) in South Africa.—A few months ago there appeared in our pages (*ante*, p. 227) a statement made by a Mr. Barton, of the Suffolk Regiment, that Goldfinches were common half-way up the hills at Heidelberg, in the Transvaal, and were breeding there. I thought it best to add a qualifying note to this record, as it was against my own experience in the Transvaal, and I stated that I had written to that country, and to that locality, for further information on the matter. Mr. F. G. Nicholson, who then resided at Standerton, within easy distance of Heidelberg, replied:—"I have seen no Goldfinches near Standerton or Heidelberg, and am of opinion that even though the soldier mentioned did capture them, they must have but recently escaped from confinement." He added he was making further inquiries, and I have just received another letter from him on the subject, in which he says:—"I have done all I can, and have interviewed Heidelbergians, but can find no confirmation of the story." Mr. A. Ross, of Johannesburg, also gives me the same negative information. I therefore think that the presence of the Goldfinch in a wild state either at Heidelberg or any other district of the Transvaal can be considered as a record probably based on hasty and inexperienced observation.—W. L. DISTANT.

Cuckoo calling in July.—Whilst at a bowling party at Stalham on Aug. 17th ult. a Cuckoo flew across the green; one of the players thereupon told me that he had heard one calling in the Broad district on Aug. 18th. From my own notes I cull the following:—Earliest appearance, W. Rudham, Norfolk, April 18th, 1891. Latest seen, Potter Heigham, Norfolk, Sept. 25th, 1901. Earliest egg (Greenfinch nest), Canvey Island, Essex, May 8th, 1882. Latest egg (Wagtail's nest), Hickling, Norfolk, July 7th, 1899. Latest calling, July 8th, 1891; Brunstead, Norfolk. How late the Wood-Pigeons are breeding this autumn! On Sept. 19th there were eggs still unhatched at Catfield. Shooting there on Sept. 21st, my dog brought me an unfledged squab from a very low nest in an alder-stub, and our "bag" included eleven with particles of down still adhering to their neck-feathers, and nineteen such were accounted for at Horning on the following day. My log-book, however, reminds me that I handled a "brancher" of this prolific species on Dec. 2nd, 1886.—MAURICE C. H. BIRD (Brunstead Rectory, Stalham).

An October Cuckoo.—The occurrence of a Cuckoo in October seems almost as improbable as the oft-repeated story of the Cuckoo in March, but my friend the Rev. H. A. Harris, of Aldeburgh, came to me for a night on Oct. 1st, and assured me that a young Cuckoo was still frequenting some of the gardens in that town. On Oct. 7th he wrote to me:—"I have to-day again seen the Cuckoo. I followed him up and got quite near him in a garden close to our house. He perched on the ground, or rather on a heap of garden-refuse, and began to eat what I think were cabbage-butterfly caterpillars, of which there were a great number crawling about seeking some place to spin up in. He was very dark indeed; even the neck and chest were a dark cigar-ash colour, and the abdomen was barred with reddish brown."—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Large Flight of Rough-legged Buzzards near Scarborough.—On Oct. 16th about a dozen Rough-legged Buzzards (*Buteo lagopus*) were seen hovering about on the moor near to the racecourse; four fine birds were secured, and the remainder are now scattered about the locality, some having since been seen in the carrs, others on the wolds, and on the cliffs. The following birds have also been captured near Scarborough, *viz.* a fine mature male Peregrine Falcon, Little Gull, Crossbill, Black Tern, and a fine variety of pied Stock-Dove.—J. MORLEY (King Street, Scarborough).

Strange behaviour of Peregrines in Ireland.—We have received
Zool. 4th ser. vol. VII., November, 1903.

from Mr. A. H. Evans, of Cambridge, the following very interesting letter from one of his correspondents :—

" Probably you may remember leaving your address with me when here with Mr. Ussher last April ; as I intended writing you, with a view to your obtaining me a purchaser for the young Peregrine hawks, if the gentleman who usually took them from me did not want them this year. The nest, as I will relate, was very unfortunate. You will remember Mr. Ussher going to it, and reporting ' three eggs, one a beautifully marked one.' Four or five days after, I noticed what I thought was a strange Peregrine on the cliff in which the Raven bred. After starting it from its perch, it arose in the air, when the local tiercel suddenly made its appearance, and after some slight aerial encounters the two birds flew inland, one apparently in pursuit of the other. I said to myself, this is evidently either a strange Hawk, or else the Falcon must have forsaken her nest in the adjoining cliff ; so I will take a run over and have a look. I went across directly, and found the Falcon sitting snugly on the nest, when I became certain that a strange Hawk was around. I went on the morrow to the cliff on which I saw the strange Hawk the preceding day, and, peering cautiously over the cliff-top, I saw this bird on a jutting crag, looking like an immense Falcon ; while, singular to tell, almost the exact spot on which she stood was a breeding-site of the local Peregrines from which I saw Mr. Ussher take eggs some twelve years ago, and from which I took young Peregrines some six years previously. After straightening myself up, the Falcon at once saw me, and, with loud screams, took wing and flew away ; but I came again late in the evening of the same day, and found her roosting in the cliff. Next day I saw the local tiercel and herself having those aerial encounters again, and I could hear the Falcon emitting those wild cries peculiar to the bird at the beginning of the breeding season. I then went across to the breeding-site, and found the local Falcon sitting all right on the nest. A day or two after I found two Peregrines (I had the glass with me) sitting on the wall of the old ruin (which, you may remember, overlooked the Raven's nest) within four yards of each other, and apparently on friendly terms. My curiosity was aroused, so I hurried across to the breeding-site of the Peregrines, from which I could command both a view of the nest and of the two birds at the same time. On the nest I still found the Falcon sitting tightly, when I thought this tiercel of mine is fast becoming a polygamous bird, and evidently intends presenting me with another clutch of young Peregrines this season. A few days passed, and I

paid another visit to the breeding-site. I had the glass with me, but scan the nest as I would, I could not discern a trace of the Falcon; and I went next day, with a like result. I was completely surprised and nonplussed at the absence of the bird at such a critical stage of the incubation, which was somewhere about the last week in April. Next morning my servant was out doing some work by the cliff-side, and on his return he told me he had seen a great fight between the two big Hawks (*i.e.* the Peregrines), that they clawed each other in the air, and were both falling into the sea when they separated. One flew upward, and the other fell into the sea, but after striking the water it rebounded again, and, flying shoreward for some yards, fell again into the sea, when it commenced flopping and floundering towards the shore, which it reached after much ado, and in a most bedraggled condition. The place which the bird reached cannot strictly be called 'the shore,' as deep water is there at every stage of the tide, but there are shelves at the base of this particular cliff, from which the sea recedes at low water, and on which an incoming wave floated the poor bird. I made a search for the bird a short time afterwards, but without result. Probably the tide, which flowed in the meantime, must have carried the Hawk away.

My theory of the whole matter is this. The strange Falcon must have ultimately seduced the local tiercel from his allegiance to his mate, and the latter remained on the eggs forlorn, until hunger compelled her to go foraging for herself. She must have been on one of these foraging expeditions when she chanced to fall in with her rival, and, as she was weakened by starvation and worn out by her long period of incubation, her rival easily overcame and vanquished her. I intended going down to the nest to see how matters stood there, but as I was expecting Mr. Ussher, I put off the visit until he came, about a fortnight after. I told him all I have written, and thought he might like to go down and see the nest. He was, however, suffering from a sore knee, and could not go. I then proposed to go myself, as I was really anxious to see how the eggs fared. Mr. Ussher said I would probably get no eggs, as the Grey Crows would have carried them off. I went down, and found only two eggs, very much discoloured and stone-cold. So thus fared the Peregrines' nest this season. I have to apologise for asking you to wade through this tedious letter, but I thought the circumstances of the case rather novel, and that you might like to learn the whole details. I hope you will keep me in mind as regards a sale for the young Peregrines next season, as I may have occasion to write to you.—P. GOUGH (Island-Stradbally, Portlaw, Ireland)."

Sabine's Gull in Yorkshire.—Another Sabine's Gull (*Xema sabini*) was shot in Bridlington Bay on Oct. 7th, and received here in the flesh two days later. This one was a bird of the year, and except for the black-tipped tail much resembles a young Black Tern in plumage. It makes up five in all (four adults) obtained on the Yorkshire coast in less than six weeks, while probably others have been sent away with Terns for millinery purposes.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Was it a Great Auk?—I have under me a Finn, who is a great hunter, trapper, &c., and who is well acquainted with all sea-birds, Mammalia, and everything else pertaining to these parts. The man, knowing that I am greatly interested in ornithology, came to me one day and said, in his broken Norsk, that he had seen a bird swimming and diving about in the bay which he had never seen before. It was, he said, quite tame, and was close in to the wharf. He described it as nearly all black, and with a big beak, but not a beak like the Cormorant, but more like a "Lunde" or Puffin. I thought at once of the Great Northern Diver, but on showing him the figure in 'Yarrell' he laughed, and said it was a bigger bird; and besides, he knew the Diver, and told me at once there were two, one small and one large. I showed him *Alca impennis*, and he said that was just like it, only he did not see any white on it. This, if swimming, is possible. He would have gone for his gun, but did not like to do so in work hours. I cannot say I regret that he did not. I give you this for what it is worth. I know the man well, and that he could have no possible object or inclination to concoct a tale. I have found all his information absolutely reliable.—H. A. A. DOMBRAIN (British Vice-Consul, Brettesness, Lofoten).

Notes from Lincolnshire.—The following birds are in the hands of Mr. Nash, of Lincoln, for preservation. All of them were obtained between Sept. 20th and 29th near the outfall of the River Welland:—Black-tailed Godwit (*Limosa Belgica*), male; Spotted Redshank (*Totanus fuscus*); Reeve (*Machetes pugnax*), immature; and Red-necked Phalarope (*Phalaropus hyperboreus*), male, immature.—F. L. BLATHWAITE (5, Monks Leys Terrace, Lincoln).

NOTICES OF NEW BOOKS.

A Treatise on Zoology. Edited by E. RAY LANKESTER, M.A., LL.D., F.R.S., &c. Part I. Introduction and Protozoa. Sec. Fascic. by J. B. FARMER, D.Sc., J. J. LISTER, M.A., E. A. MINCHIN, M.A., and S. J. HICKSON, F.R.S. Adam & Charles Black.

THE term "serious students" is probably exact, but too suggestive ; we may propose "real students," and all such will appreciate another volume of this advanced series. It is not addressed to the collector of natural history curios, nor specially to the bionomical observers who are the salt of the pages of this Journal ; but it contributes to the faith and evidence for a qualified biologist. It is one of the strongest volumes yet issued, and the opening chapter (continuation of Protozoa) on "The Structure of Animal and Vegetable Cells," by Prof. J. B. Farmer, is a contribution to the knowledge necessary for a real recognition of the "something" which makes for evolution. It is in such minute studies that we can almost watch the earliest pulsations of life.

Dr. Lister writes on the Foraminifera, a treatise which Prof. Ray Lankester states "contains much that is new and original." It is probable that, to the general reader, the order *Globigerinidea* of this Class is best known, and that owing to the classical lecture by Huxley "On a piece of Chalk." Dr. Lister will guide those who wish to travel farther in this study. Perhaps the subject which will attract most modern students is that of the Sporozoa, written by Prof. Minchin. The Sporozoa are always with us. "There is perhaps no species of annelid, mollusc, arthropod, or vertebrate which is not liable to become the host of some kind of sporozoan parasite—at any rate in certain localities—while many animals harbour several species of these intruders at the same time." Sometimes their presence is almost unnoticed, but in other cases they "produce dangerous or even

fatal diseases, and may be the cause of ravaging epidemics." The Sporozoa have even been suspected as a cause of that cruellest of human maladies—cancer, and hence these parasites are individually and collectively enemies to the human race, to be studied and ever combated by biologists and pathologists; thus the importance of Prof. Minchin's treatise can scarcely be overestimated. The Infusoria by Prof. Hickson is the last contribution to the volume. We remember as a boy, in the early sixties, turning over the pages of 'Pritchard's Infusoria,' without much appreciable profit or enlightenment, save the charm and awe which such publications impress on the juvenile mind. These pages impress us with the different information that is now so readily attainable, and inspire an optimism as to the advance of biology by future generations.

We hear much of evolution in these days; it has almost become a catch-word, and a text for a ready speaker, but how few have really assimilated the idea, or understood the proposition! A student of these volumes can fortunately find much of the evidence on which the evolutionary doctrine rests, and thus obtain a real grasp of the greatest of human conceptions.

A Manual of Palæarctic Birds. By H. E. DRESSER, F.L.S.,
F.Z.S., &c. Published by the Author at 3, Hanover
Square, W.

DRESSER'S 'Birds of Europe' is a recognized classic in ornithology, but it is necessarily a costly book, above the means of many; and, again, its bulky volumes constitute a library book, quite unsuited for the travelling naturalist. We therefore welcome this Manual, which not only gives us the essence of the larger work, but something more as well; for Mr. Dresser has now taken under his purview the birds of the whole Palæarctic region, and in defining this region he has allowed himself considerable latitude in drawing its southern boundary. Africa has offered no difficulty, for the Sahara is all-sufficient there; but when we come to Asia authorities disagree. The author of this Manual defines the southern limits of the region as running northward of the Arabian Desert, including the tableland of Persia, the highlands of Baluchistan, the whole of Afghanistan,

and the Himalayan Range above about 6000 ft., stretching to the south of Tibet, and north of the valley of Yang-tse-kiang as far as the Pacific, and then round Corea and the main islands of Japan. This is doubtless a good working Palæarctic proposal, though the inclusion of the Himalayas is perhaps more novel, and Japan, though orthodox, possesses a considerable Oriental element. Consequently this work is valuable as covering a very wide and interesting area.

We have been impressed, in consulting these pages, by the wealth of bionomical information that is afforded beyond the necessary guidance to the identification of the species. In addition to the range of dispersal, we have the wintering quarters of most of the migratory species, and details of the call-note, song, food, habits, and nidification. Another very strong point is the list of common or trivial names under which the bird is known in its different habitats, an enumeration much fuller than any other with which we are acquainted, and which must prove of the greatest value to the comparative philologist as well as to travelling or field naturalists.

The absence of trinomialism in nomenclature is a prominent, and, to many, a most welcome feature in these pages; subspecies are admitted when they appertain to the rank of what some style in preference "local races," but we notice that the author prefers to give a separate number to these, as is applied to distinct species. Some difficulty is in this way created in estimating the whole enumeration. Thus *Acredula caudata* is numbered 223, and the following six subspecies are also numbered 224-229.

It is quite a relief to be able to demur to a single method in such a publication. It is a *vade mecum* for the Palæarctic ornithologist, and may well be placed between Newton's 'Dictionary' and Saunders's 'Manual.'

Observations of a Naturalist in the Pacific between 1896 and 1899.

Vol. I. Vanua Levu, Fiji; a description of its leading Physical and Geological Characters. By H. B. GUPPY, M.B., F.R.S.E. Macmillan & Co., Lim.

THIS volume is entirely devoted to an exhaustive dissertation on the geology of the island, but its interest, although primarily

geological, indirectly refers to some of the most disputed points in the discussion of zoo-geographical distribution. Dr. Guppy tells us that his investigations were largely connected with the study of plant-distribution, the details of which are promised in a second volume. It is probable that no real knowledge of a fauna or flora is possible without some acquaintance with the geology of the floor on which they flourish, and it is more than probable that the biology of the future will embrace a much larger geological consideration than it does at present.

Dr. Guppy has his own views and forms his own conclusions on the debatable question of submerged continents; he is convinced that "islands have always been islands"; he denies that there is any evidence that the various islands of the Fiji Group were ever amalgamated, or that they were ever joined to the Solomon Group. He thus gives no support to the hypothesis of a Pacific Continent, nor to the theory of a Melanesian Plateau. He advocates the view that these islands are due to "emergence," which has been in operation probably since the later Tertiary period, and is even now not suspended. Such an argument, it is, however, admitted, cannot apply to Hawaii in the North Pacific, which exhibits no evidence of emergence, and bears the impress of antiquity by the number of its endemic plants and animals, and his hypothesis must therefore be confined to the southern portion of the tropical Pacific. Consequently the fauna and flora of the Fijis must be considered as due to derivative migration, and not to the survivors of an older and submerged continent. Beyond the work of ocean currents, Dr. Guppy refers much to the direct agency of birds, more particularly as to plant distribution, but for proofs and details on this question we must await the publication of the second volume.

Whether these views are generally accepted, or the reverse, there can be no doubt that this volume affords a brilliant example of the way in which a purely geological study can be made the preface for the most important zoological discussion.

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ON THE GESTATION OF THE BADGER.

By ALFRED HENEAGE COCKS, M.A.

THE vexed question of the gestation of *Meles meles* was, I quite thought until this spring, fairly settled by the note of Mr. E. G. Meade-Waldo in ‘The Zoologist’ for 1894; but now—however, I will relate my recent experiences.

On March 2nd, 1902, a female Badger was brought to me, together with its pair of cubs, which I judged to be about twenty days old, just dug out in one of the neighbouring woods, the owner of which, sad to say, does all he can to exterminate the species. In hopes of saving their lives, I purchased the three; but, as was to be expected, the mother killed the cubs during the ensuing night.

Their principal measurements (in inches) are appended, so that anyone may, from his individual experience, form his own opinion as to their age:—

THE MALE.	THE FEMALE.	
Head	2 $\frac{1}{8}$	2
Neck and body ...	5 $\frac{9}{16}$	5 $\frac{9}{16}$
Tail	1 $\frac{1}{4}$	1 $\frac{1}{8}$
Total length ...	9 $\frac{3}{8}$	8 $\frac{1}{8}$
Elbow to toe, includ- ing nail, 1 $\frac{1}{8}$; hind- foot, including nail, 1 $\frac{1}{16}$; breadth of fore foot, $\frac{1}{2}$.		Central line of head from nose to poll white, gradually blending into the grey of back. The usual black stripes through eyes only grizzled, or (if the term is ad- missible) <i>faint</i> black. Under side devoid of hair, including inner sides of legs. Upper side light grey, only very slightly darker on outer sides of legs.

On different days during May of that year another pair of cubs was brought me from the same wood, born probably much about the same time as the previous pair, and therefore then somewhere about three months old. These I also took to. The young female died from injury received in trapping, but the young male, sharing a cage with the old female, gradually grew into a fine animal.

Early on the morning of March 21st, 1903, young were born, oddly enough only a day after I had (unsuspectingly) moved the pair into more roomy quarters. Either therefore pairing had taken place before the female was captured on March 2nd, 1902—at latest when her young of that year were only about three weeks old, which means a gestation of at least three weeks over a twelvemonth—or else the male born in 1902 arrived at puberty soon enough to become the father of a family by the time he was a year (and possibly a week or two extra) old. Bearing Mr. Meade-Waldo's experience in mind, and ignoring all previous records, I was inclined to the latter alternative.

In the latter part of April I paid a visit to Mr. G. W. Duff-Assheton-Smith, at Vaynol Park, Carnarvonshire, and, on comparing notes concerning our respective "menageries," he told me that he had likewise bred a litter of Badgers early in March this year. He had been very careful not to disturb them, but on one occasion three young were seen. The old female had been captured "about twelve months" (though he had unfortunately no note of exact date), and the only companion she had since had during any part of the time was another female. Though it would be more satisfactory if we had, chapter and verse, the precise date of her capture, and of the birth of the cubs, yet it makes no difference as to the main fact, for of course "about twelve months" cannot be explained away into anything corresponding to the four and a half months (approximate) of Mr. Meade-Waldo's experience.

On April 25th we had a thorough investigation, and found only one cub, the other two having mysteriously disappeared. On my return home late on the 27th, my animal-keeper reported that something had that day (or during the previous night) gone wrong with my Badger family; that he had found one of the cubs very cold and weak, which he had fed with milk and replaced,

but that I had better see to them in the morning. On doing so one cub was found dead, and the other one stone-cold and evidently deserted. When a suckling animal once gets stone-cold it is generally past all aid, and, in spite of my best endeavours, the luckless youngster died early in the ensuing night. As it was quite plump and heavy, the mother's desertion must have been a sudden inspiration, and not the result of a gradual failure of her milk.

It may have been merely a coincidence having no bearing whatever on the question of gestation, but it struck me that the fact of these two Badgers deserting (and in the one case eating) their offspring when some few weeks old was a point of importance in investigating their domestic economy.

My Badger had been a most assiduous mother—in fact, the most so that I ever met with, for she never left the box in which the young were born by night or day, and we had even to put her food into the box, for if placed even immediately outside it remained untouched. The motive must have been a very powerful one which suddenly induced her to act in a precisely contrary manner.

The only likely explanation that occurs to one is that the Badgers came in season about five weeks after the birth of the cubs, and, no male being able to get to them (I had shut away the male immediately on the birth of the cubs), their excitement and distress became so great as to cause them to forget the youngsters, which until then had been the subject of their tenderest solicitude.

On the other hand, my male Badger was observed trying to pair on the evenings of July 24th and Aug. 19th last; and the pair were heard growling in a quite unusual manner on the evening of the 31st of that month, and grunting and squeaking on that of Sept. 7th.

NOTES ON OXFORDSHIRE ORNITHOLOGY.

BY THE LATE CHARLES E. STUBBS, OF HENLEY-ON-THAMES.

EDITED BY O. V. APLIN, F.L.S.

CHARLES E. STUBBS, of Henley-on-Thames, who died in 1872, at the age of (about) seventy-seven, formed an extensive collection of the eggs of British Birds. His carefully prepared "Egg Book" is now in the possession of Mr. Heatley Noble, to whom I am indebted for the loan of it, and permission to publish some extracts from it relating to the birds of Oxfordshire. This very interesting volume is not merely a catalogue of Mr. Stubbs's eggs, but is rather a sketch of the history of the different species of birds, the eggs of which were represented in this (at that date) very complete collection. Under the heading of each species especial reference is made to the status of the bird in the neighbourhood of Henley. From internal evidence the "Egg Book" proper appears to have been completed in the year 1867; but at the end of the volume Mr. Stubbs wrote "A slight Sketch of the Ornithology of Henley-on-Thames," and this seems to have been written just subsequently to the winter of 1867-8. In the extracts from the MS., which I here reproduce, I have brought together under the heading of the respective species the information contained in the "Sketch," and in the Catalogue so far as it relates to Oxfordshire birds.

This information is especially interesting from the facts that it shows the status during the earlier part of the nineteenth century of some birds which have decreased or increased since that period, and that it relates to a part of the county scarcely touched upon (and that merely in reference to a few rare visitors) by the Messrs. Andrew and Henry Matthews in their "Account of the Birds of Oxfordshire and its Neighbourhood," published in 'The Zoologist' for 1849 and 1850. Mr. Stubbs was evidently an excellent field ornithologist of the old-fashioned sort. He was a frequent contributor to the pages of 'The Zoologist' in

the sixties, and there is evidence in his "Egg Book" that he was in communication with some of the best ornithologists of his day.

Such annotations as I have thought advisable to make are included in square brackets.

WHITE-TAILED EAGLE (*Haliaëtus albicilla*).—Many years back one was taken alive in a fir-plantation at Fawley Court. [A small part of the park at Fawley Court is in Oxfordshire.]

HOBBY (*Falco subbuteo*).—Frequently shot. In a few cases I have had the eggs. The last eggs I had were the 20th May, 1862, *viz.* four taken at Kidmore End [five miles north of Pangbourne]. The female was shot from the nest. The top slender branches of a tree is a favourite situation for the nest. [May 20th is an unusually early date for a full clutch of Hobby's eggs, and four is an unusually large clutch in this country, three being a more usual number. But in this case there can be no doubt about the identity of the eggs. The Hobby still breeds, or tries to breed, annually in Oxfordshire, or just over the borders. This year (1903) the female of a pair was trapped a few miles south of Oxford on June 9th; and another female was shot about two miles over our Warwickshire borders on Aug. 15th. In this case, I believe, the young had been reared.]

MERLIN (*F. æsalon*).—Has been shot on several occasions, generally in the winter. The eggs have been taken twice. In one case the nest was on the ground in a large field at Bolney. The second was at Skirmett [on the hills in Bucks], when a pair of eggs was taken in the first week in May, 1864. Eggs from both nests are in my collection. [I hardly know what to make of this note. It is an almost unheard of thing for Merlins to breed in the southern midlands.* But Stubbs was such a good naturalist that it is impossible to entirely discredit the record.

* Mr. W. L. Mellersh, however, writing of the Forest of Dean, says:—"The Merlin, on the other hand, which was formerly a resident, has in recent years been shot in June amongst gorse on the open ground. This suggests that the bird may still nest on some of the open tracts within or just outside the forest, but no nest has been found" ('A Treatise on the Birds of Gloucestershire,' p. 87). And Mr. (now Dr.) R. B. Sharpe informed Clark Kennedy that he had received the eggs from Woburn, a village about two miles to the north-east of Cookham ('Birds of Berkshire and Buckinghamshire,' p. 108).

And, moreover, I never heard of the Kestrel breeding on the ground—in low-lying ground ; but it is noteworthy that Stubbs makes no mention in his " Sketch " of the Merlin breeding.]

GOSHAWK (*Astur palumbarius*).—Some years back a very fine female was shot at Stonor Park. I saw it in the flesh. [The only occurrence of the Goshawk in Oxon known to me.]

KITE (*Milvus regalis*).—I never saw one on the wing. "An old countryman, about eighty, tells me that he remembers when the Kite used to breed between the forks of a large elm tree in Harpsden Bottom, and that he has had the eggs. This is the last in our locality that I can hear of." [As I have previously remarked (*vide 'Birds of Oxfordshire,' p. 80*), in the extreme south of the county the Kite apparently became rare at an earlier date than in mid-Oxon, where it seems to have lingered until 1840 or 1850.

BUZZARD (*Buteo vulgaris*).—Occasionally shot, mostly in winter. The Rev. — Hull, then of Badgemore, told me (at the time) that in the summer of 1858 he plainly saw one fly up out of a large field. I never heard of a local nest.

ROUGH-LEGGED BUZZARD (*B. lagopus*).—Has been shot a few times in the neighbourhood.

HONEY-BUZZARD (*Pernis apivorus*).—Has been shot on a few occasions.

HEN-HARRIER (*Circus cyaneus*).—I have seen one or two in the flesh, shot here.

LONG-EARED OWL (*Asio otus*).—I know two or three localities where it breeds regularly. It nests early in March ; usually uses old nests of the Crow or Magpie. One nest was in a Squirrel's "drey." [In West Oxon it breeds regularly ; in March.]

SHORT-EARED OWL (*A. accipitrinus*).—A not uncommon winter migrant.

BARN-OWL (*Strix flammea*).—Common. Breeds in " barns, churches, ruins, old buildings, hollow trees, outhouses, clefts in chalk quarries, pigeon-cots, and up under roots of trees over-hanging chalk-pits." [Less common now, I believe, all over the county, but at the time of writing I can still hear its weird cry almost any night from this house.]

WOODCHAT-SHRIKE (*Lanius rufus*).—Mr. Sarney, of Lambridge, once shot one here, which Harbor, of Reading, preserved.

[This is the only authenticated instance of the occurrence of the Woodchat in Oxon known to me.]

RING-OUZEL (*Turdus torquatus*).—Some few are seen every season about the borders of Turville Park. Has been shot at Swyncombe, Ibstone, and North End. [The two latter localities are on the Chiltern Hills, just on and over our boundary, in Bucks.]

GOLDEN ORIOLE (*Oriolus galbula*).—Once shot here.

REDSTART (*Ruticilla phoenicurus*).—Occurs but sparingly, by no means common. [It has become more common in recent years, and is numerous in North Oxon.]

STONECHAT (*Pratincola rubicola*).—By no means uncommon here on our large scrubs and commons. Nests towards the latter end of March. The local name is "Black Top."

WHINCHAT (*P. rubetra*).—Much more common than the Stonechat.

WHEATEAR (*Saxicola œnanthe*).—The rarest of the three. I believe it never breeds. Occasionally found "during the autumn and winter months." I had one, shot at Harpsden in November. [I believe some breed on the Chilterns not far from Henley.]

GRASSHOPPER-WARBLER (*Locustella naevia*).—Not rare; I have eggs almost every season.

[DARTFORD WARBLER.—Stubbs had searched for this in vain.]

WOOD-WREN (*Phylloscopus sibilatrix*).—Not rare in our beech woods and oak copses.

BEARDED TITMOUSE (*Panurus biarmicus*).—Has occurred on two or three occasions in some of our larger reed-beds. One or two have been obtained in the neighbourhood. [Three years ago a pair of Bearded Reedlings, through the kind intervention of Mr. W. L. Mellersh, came into my possession, with the following history:—About the year 1870 a man living either in, or close to, Oxford was in the habit of sending birds in the flesh to a bird-stuffer at Cheltenham (now dead, but whose son carries on the business) to be preserved, and afterwards of selling them; he sent, among other things, a number of Kingfishers. About this date he sent a pair of Bearded Reedlings, and the birdstuffer knowing their rarity, bought them himself, and sold them to a private collector in Cheltenham, in whose collection Mr. Mellersh saw them. Mr. Mellersh then, some time previous to his

obtaining them for me, learnt their history. At the death of the owner of the collection it passed to a relative at Newcastle-on-Tyne, who kindly presented the Reedlings to me through Mr. Mellersh, in order that these interesting Oxfordshire examples might again find a place in their native county.]

WAXWING (*Ampelis garrulus*).—Occasionally obtained. I have a pair which were shot in the Marlow Road, near the spring opposite Fawley Court House. [Just in Oxon.]

WOOD-LARK (*Alauda arborea*).—Occurs in small numbers, and I have frequently had their eggs. They nest early, in the beginning of March. They keep in small families of seven or eight in winter. [The Messrs. Matthews' observations, relating to the wooded Chilterns a few miles to the north, agree with these remarks (*vide* Zool. pp. 2597 and 2736).]

SNOW-BUNTING (*Plectrophanes nivalis*).—Visits our neighbourhood in hard winters, and I have seen several that have been shot here. They have always been in the tawny state of plumage. Our country boys know them as Snow Flecks. “The more severe the frost, the more Snow-Buntings” (“Sketch”).

CIRL-BUNTING (*Emberiza cirlus*). I have frequently met with it in our immediate neighbourhood, and in two or three instances with the nest and eggs. The last I had was from Norman, the keeper at Henley Park, who shot the hen from the nest, and brought it to me.

TREE-SPARROW (*Passer montanus*).—Frequent. Breeds mostly in old pollard-willows.

HAWFINCH (*Coccothraustes vulgaris*).—Breeds yearly at Henley Park, Bix, Shiplake Bottom, Harpsden Court, Holmewoods, Peppard, and Upper Assendon. Have had eggs from all these localities. [In the ‘Birds of Oxfordshire,’ p. 92, I indicated “the thicker portions of the Chiltern woods, where the hornbeam (the seeds of which are a favourite food of this bird) is a native, . . . as likely to harbour the Hawfinch in some plenty.”]

CROSSBILL (*Loxia curvirostra*).—Hewer told me he once had the nest and eggs from Swyncombe. [Hewer was the birdstuffer at Henley, who had the Oxfordshire Honey-Buzzards’ eggs mentioned in the ‘Ootheca Wolleyana,’ one of which is figured by Hewitson in the third edition of ‘Eggs of British Birds,’ 1856. It is rather strange that Stubbs does not mention these eggs.]

RAVEN (*Corvus corax*).—Extinct. “ My dear old friend (Mr. Hickman) used to tell me he remembered them breeding [in a large oak] in Crowsley Park, many years ago.”

SPOTTED WOODPECKER (*Dendrocopos major*).—Young ones were taken from an apple tree at Nettlebed. I saw young in Lambridge Wood for two seasons running.

WRYNECK (*Lynx torquilla*).—Common. Local name, “ May Wit.” [I have not met with the name elsewhere. I doubt if the Wryneck can be called common in any part of the county at the present time. In the north it is quite uncommon.]

HOOPOE (*Upupa epops*).—One was shot at Widmore Pond, near Henley, four years ago. I am told that one was shot at Grays Court many years ago.

ROLLER (*Coracias garrulus*).—“ Has been shot once here, in the neighbourhood of Greys Court.” [In the Egg Catalogue, Stubbs said he never knew of its occurrence in the neighbourhood, but the “ Sketch ” was written subsequently, just after the winter of 1867–8.]

SAND-MARTIN (*Cotile riparia*).—The earliest of the three species of Swallow; “ generally reaches us the third or the last week in March.” [In the north of the county it does not arrive until later.]

STOCK-DOVE (*Columba ænas*).—I have only met with it in winter, in flocks. But I had a pair of eggs brought to me from a rabbit-burrow at Medmenham. [This place is in Berks. The rarity of the Stock-Dove as a breeding species at that date is noteworthy. The Messrs. Matthews wrote that its nest had sometimes been found. Mr. Goatley informed them that it was resident, and bred in holes in trees in Heythrop Park. It is nowadays a common breeding species.]

ROCK-DOVE (*C. livia*).—“ Rockier.” Is occasionally shot in the winter months.

RED-LEGGED PARTRIDGE (*Caccabis rufa*).—Not at all common. Nest of eggs taken in May, 1867, at Bottom House Farm. [In the “ Sketch ” he says], I generally see five or six in a season at the poultrey’s. [Has increased very much since that time, and is now common all over the county.]

QUAIL (*Coturnix communis*).—Now much rarer about here than it used to be formerly.

STONE CURLEW (*Edicnemus crepitans*).—A favourite of mine. I like to hear his shrill nocturnal whistles. A common summer visitor around here, and in an evening ramble their shrill cry may often be heard. They keep to the large upland fields during the day, and in the evening come down to the water meadows and fallows to feed. I have been told by old farm labourers that when going to the fields in the early morning they have seen them sitting on the gates as if roosting [a most remarkable fact]. It flies in flocks, and when on the wing is very vociferous, doubtless to keep the stragglers together. It comes in the beginning of April, and leaves in August or September. I have had eggs taken on May 23rd, 1860, near the Round House at Fawley [Bucks], in a large stony field, and since then I have had them more than once. They are very difficult to find. Breeds in the large stony fields about Bix. [They still breed on the stony fields on the Chilterns.]

GOLDEN PLOVER (*Charadrius pluvialis*).—A great many in some seasons, mostly in winter. I have occasionally seen very young ones.

DOTTEREL (*Endromias morinellus*).—Has been shot two or three times, but of late years become very rare.

HERON (*Ardea cinerea*).—Some few remain occasionally to breed in one or the other of our woods, but not in sufficient numbers to be called a heronry. I have known nests at Shiplake, Bolny, Harpsden Moor, and in Oaken Grove. The nearest heronry is at Harleyford, below New Lock [Bucks]. It is on the increase and strictly preserved. In 1866 there were over forty nests.

PURPLE HERON (*A. purpurea*).—One shot many years ago near Reading. Harbor stuffed it. [I cannot trace this specimen.]

NIGHT HERON (*Nycticorax griseus*).—In 1849 as many as three were obtained in the neighbourhood of Oxford. [I cannot find out anything more about these examples.]

REDSHANK (*Totanus calidris*).—Has been shot on a few occasions, e. g. in large ditches at Bolny and Shiplake.

BLACK-WINGED STILT (*Himantopus candidus*).—One shot many years ago at Shiplake; was preserved by Hewer. It passed into the hands of Mr. Sotham, and from him went to

Oxford, where it was lost sight of. [This is evidently the specimen stated by Messrs. Matthews to have been for some time in the possession of Mr. Kirtland, who obtained it soon after its capture, "but is at present in the collection of the Rev. H. Roundell" (of Fringford), (Zool. 1849, p. 2602). I should be glad to know what became of this collection, which contained many Oxfordshire rarities.]

SNIPE (*Gallinago coelestis*).—I think they may breed here. A nest and eggs were taken at Sonning many years ago, and I had some of the eggs. Put up a pair "not long ago—May, 1867—on the edge of a piece of water near Shiplake Station."

CORN-CRAKE (*Crex pratensis*).—A very common visitor. During summer its harsh cry may be heard from almost every field. It delights most in moist grass fields on the banks of the Thames. Several may be heard calling against each other. It comes the last week in April or first in May, and departs, as a rule, late in September; but I have seen them late in November. Breeds in grass meadows and clover-fields. Many nests are mown out during the hay harvest, "when I can always get numbers of their eggs, sometimes three or four nests in a field. They will sometimes lay in the withy eyots." [I can remember when the Corn-Crake was nearly as common in the north of the county. When I was a boy, as far as I can remember, pretty well every field shut up for grass had its Corn-Crake, and one always heard of nests mown out when the grass was cut. The cry of this bird was as familiar a summer sound as that of the Cuckoo. I have heard the Corn-Crake calling in Christ Church meadow, and once when sleeping in Wellington Square, Oxford, in May, 1880, I could hear the cry as I lay in bed. Gilbert White noticed the abundance of the Corn-Crake at Oxford. He writes: "Landrails used to abound formerly, I remember, . . . in the meadows near Paradise Gardens at Oxford, when I have often heard them cry crex, crex." Now, for some unexplained reason,* the Corn-Crake has become very rare here in summer,

* It is possible that the late dry summers may have had something to do with the scarcity of the Corn-Crake. The late Mr. Cordeaux stated that in the parish of Great Cotes and the adjoining parishes—a district particularly adapted to their habits—Corn-Crakes were comparatively rare until about 1861. In 1864 they became suddenly tolerably plentiful, and for the next

and I have heard and read that the same thing has happened in many parts of the country. In some summers lately I have heard none at all here, but I heard one this year near Banbury, in a small field of hay-grass, and another near Bampton; and my brother in Northamptonshire, about twelve miles from here, heard one there, the first he has heard since he went there to live in 1895. Possibly the tide may have turned. The last summer that we had any number of Corn-Crakes was 1885, when I heard three calling at the same time. Some people think that the use of mowing machines has caused the Corn-Crakes to desert us, or exterminated the race which came here to breed. But I cannot understand in what way the machines could have affected them, as I never heard of Corn-Crakes being cut to pieces by them, and plenty of nests were mown out in the days of the scythe. At all events, if Corn-Crakes came back to us, they would find ample breeding accommodation; for the custom of the farmers selling hay has assumed the last two or three years such enormous proportions that I should think the acreage of grass-land shut up for mowing is at least double what it used to be five and twenty years ago; and so much of this, from want of sufficient labour, stands until so late in the season, that the Corn-Crakes would in many fields be able to hatch off their young long before the rattle of the machine sounded the notice of ejectment. We still see, in some years, a good many passing migrants in September. Probably these birds have been bred in Ireland or Wales, where they still abound.]

Coot (*Fulica atra*).—Breeds at Bolny and Lashbrook, &c.

GREY-LAG GOOSE (*Anser ferus*), BEAN-GOOSE (*A. segetum*), WHITE-FRONTED GOOSE (*A. albifrons*).—All these have been shot a few times; the first is the least common. The White-fronted Goose has occurred here repeatedly in winter.

BERNICLE GOOSE (*Bernicla leucopsis*).—Has been shot here a few times in winter.

BRENT GOOSE (*B. brenta*).—Has occurred a few times. I

three years they gradually increased, until in 1867 very considerable numbers were located in the district. He adds:—"Curiously enough, however, since this period it appears to have entirely left the neighbourhood, as during the dry seasons of 1868-70, and now in 1871, I have never heard its call."—('Birds of the Humber District,' pp. 142, 148.)

have often heard old country folks talk of them as Black Geese.

WHOOPER SWAN (*Cygnus musicus*).—Visits us in severe winters, and sometimes in considerable numbers, but they never remain long, as the gunners scare them away.

COMMON SCOTER (*Edema nigra*), **VELVET SCOTER** (*E. fusca*). Have occurred several times. About twelve years ago six of the latter were shot in one week. The last was shot not long ago.

GOOSANDER (*Mergus merganser*).—Two or three have been procured.

RED-BREASTED MERGANSER (*M. serrator*).—One was found floating dead on the river. [This species is, I think, less common inland than either the Goosander or the Smew.]

RED-NECKED GREBE (*Podicipes rubricollis*).—Met with on a few occasions on the river in winter. I had one, shot at Greenlands [Berks], some years ago.

RED-THROATED DIVER (*Colymbus septentrionalis*).—Scarcely a winter passes without one or more being shot on our reach. With us they are known as Speckled Loons.

LITTLE AUK (*Mergulus alle*).—One was caught at the end of December, 1866, in a small wood at Peppard Common. It used to feed in the early mornings on a large horsepond. An old shepherd saw it every morning for a week or more, flying to and from the pond and wood. Eventually he caught it, half-starved, with his hands. The weather was very severe. The winter of 1866-7 was long and severe. [Part of this sounds suspiciously like a "tale" of the old shepherd's.]

CORMORANT (*Phalacrocorax carbo*).—I have known them shot, at Bolny, Shiplake, Magpie Eytot, Medmenham, and Marlow, in the winter. [The last two in Bucks.]

BLACK TERN (*Hydrochelidon nigra*).—Three or four instances of its occurrence. [If a careful watch was kept this bird would probably prove to be an annual visitor to the Thames in this county. On June 29th this year (1903) I happened to visit Bampton, and walked down to the river. There I saw an adult Black Tern hawking up and down over the river. I watched it for half an hour, and left it there. This was many miles above Henley, just below where the Isis first touches Oxfordshire.]

NOTES AND QUERIES.

MAMMALIA.

Hairless Specimens of the Common Rat.—At the scientific meeting of the Zoological Society of London at Hanover Square, on Dec. 1st, Mr. F. E. Beddard exhibited, on my behalf, a hairless specimen of the Common Rat (*Mus decumanus*), which had been captured at Leyton, Essex. Two other exactly similar individuals had been caught, and others, in the same condition of nakedness, had been observed at the same place. The skin was of a slate-colour, and wrinkled into folds all over the body. No cause was assigned for the peculiar condition of the animal, some of the members present being of opinion that it was congenital, and others that it was pathological.—G. A. DOUBLEDAY.

AVES.

Ring-Ouzel near London.—On Oct. 10th last, Mr. R. M. Presland, Sen., of Hackney, shot a male *Turdus torquatus* and three Grey Wag-tails at the Sewage Farm, Walthamstow. The lateness of the stay of the Ring-Ouzel and the close proximity to London are worthy of notice. The same gentleman a few weeks previously, at the same place, obtained what is believed to be a specimen of the Buff-breasted Sandpiper.—W. PERCIVAL WESTELL (5, Glenferrie Road, St. Albans, Herts).

[On Oct. 22nd, 1850, a Ring-Ouzel was shot so close to London as Peckham ('Naturalist,' vol. ii. p. 85).—ED.]

Ruticilla titys, Scop.—Although the Black Redstart may be no great rarity in some parts of our south-western counties, it certainly is a rarity in this district. It seems therefore worth while recording an occurrence of a pair here in October last. I had an opportunity of watching this pair for the best part of half an hour; they were in the churchyard, flitting round and perching on the tombstones and church roof. The editor of Yarrell's 'British Birds' (fourth edition), 1871-74, vol. i. p. 884, in a footnote, observes that "Dorset is the chief exception" to its being a regular winter visitant to most of the south-western counties, "only one example being recorded thence." This,

however, is a mistake, as several other occurrences had been noted by the time and before that note was published (see 'Birds of Dorset,' by J. C. Mansel-Pleydell, p. 25). In this district of Dorsetshire, however, where I have lived and noted its birds, with a few exceptional intervals, during the last sixty years, the present occurrence of the Black Redstart is the third only that I have recorded. The two other records were Sept. 1st, 1882, and Aug. 27th, 1898.—O. PICKARD-CAMBRIDGE (Bloxworth, Dorset).

British Examples of the White-spotted Bluethroat.—With reference to Mr. Nicoll's note on the above (*ante*, p. 481), may I point out that the fact of the Yorkshire bird having occurred early in April seems to indicate that it was most likely to have been one of the White-spotted type? The late Herr Gätke, who had scores of Bluethroats brought to him (on one occasion sixty in a day), wrote, in his 'Birds of Heligoland' (p. 269) :—"The more southern breeding stations of the White-spotted species become habitable at a very early period of the year, and accordingly the few individuals which ever reach this island arrive as early as the end of March, or during the first days of April; at that time winter still completely reigns in the nesting area of the northern species, and does not yield to milder weather until three or four weeks later. Accordingly, the spring migration of this latter species does not take place until May." Of course, after the lapse of more than twenty-seven years, I cannot remember all the details of the colouring of the Yorkshire bird, but my notes were sent to this Journal very soon after I saw it, and it was probably an adult female assuming the plumage of the male. What became of it I do not know.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Fire-crested Wren (*Regulus ignicapillus*) in Lancashire.—A fine male specimen of this bird was brought to me for preservation on Oct. 15th by a Mr. Wyche, engineer at the Cheshire Lines Department, Warrington, who found it on the railway near Southport. It had flown into the telegraph wires and fractured its wing and neck, causing death. I am told that it is more than fifty years since a specimen of this bird was recorded in Lancashire, the last being taken in the Manchester district.—J. COLLINS, Jun. (47, Pinness Brow, Warrington).

Late Appearance of House-Martins at Eastbourne.—I noticed several House-Martins (*Chelidon urbica*) in this neighbourhood on Nov. 26th, flying round their old nests, though for some time previously I had not seen a single bird. I see that this is also the case on our eastern coast. Is not this a late reappearance of the birds, which are

expected to have left our shores more than a month ago?—D. A. BANNERMAN (1, Lansdowne Terrace, Grand Parade, Eastbourne).

Waxwings (Ampelis garrulus) in Co. Antrim.—On Nov. 24th I had the pleasure of seeing, at the establishment of the Messrs. Sheals, the taxidermists here, a pair of male Waxwings that had been shot about a fortnight previously at Toomebridge, Co. Antrim, and sent to them for preservation; these birds were in splendid plumage, the wax-like appendages being very bright and conspicuous. Messrs. Sheals tell me these two make the total up to four that have passed through their hands during the course of their long business connection here. Thompson, in his 'Birds of Ireland,' says the Waxwing "is an occasional but rare winter visitor to Ireland," and records its occurrence on three occasions near Belfast, twice about thirty years previous to 1849, and the other on Feb. 6th, 1885.

P.S.—Since writing the above quite a large number of Waxwings have been obtained or seen in this district, and, strange to say, nearly all from Co. Antrim. Below I give a list of those sent to Belfast for preservation, and the dates on which they were obtained:—

- Nov. 6th. Two males from Toomebridge, Co. Antrim.
- Nov. 28th. Two males from Antrim, Co. Antrim.
- Dec. 2nd. One male from Larne, Co. Antrim.
- Dec. 5th. One female from Lisburn, Co. Antrim.
- Dec. 5th. One female from Aghalee, Co. Antrim.
- Dec. 8th. One female from Whitehead, Co. Antrim.
- Dec. 10th. One male and one female from Islandmagee, Co. Antrim.

In addition, I understand three have been sent to Messrs. Williams, the Dublin taxidermist—two shot near Lurgan, Co. Armagh, and one at Rathangan, as recorded in the 'Field'; also one seen near Galway on Nov. 7th. It is interesting to note this constitutes a record migration as far as Ireland is concerned, as there are only two records for the north during the past forty years, namely, Feb. 28rd, 1898, one male shot at Ballinderry, Co. Antrim; Feb. 28rd, 1894, one male caught alive at Portaferry, Co. Down.—W. C. WRIGHT (Belfast).

Siskin breeding in the Co. Wicklow.—A young friend, formerly a parishioner of mine, found a pair of Siskins (*Chrysomitis spinus*) breeding this year near Rathdrum, in the Co. Wicklow. He has written to me several particulars about the birds, which perhaps may prove of interest to others. Two nests were found, the first on May 4th. This nest was taken on the 19th, and it then contained two eggs, one of which unfortunately was broken in the fall of the branch upon which the nest was built. He carefully measured the height of the

nest, and wrote saying it was 53 ft. from the ground, and about 15 ft. from the stem of the tree. He saw the bird taking moss from a Goldfinch's as well as a Chaffinch's nest. The second nest, like the first, was also found in a Scotch fir, in the topmost branches, 72 ft. from the ground. It was placed in a fork, and well hidden. The old birds were very fearless. Indeed, the hen bird was so tame that she went on the nest first found several times when he stopped shaking the bough. The second nest was less than two hundred yards distant from the first one. It also contained two eggs. He found it by watching the old bird stealing moss from a Chaffinch's nest. He is almost certain that it belonged to the same pair of birds, as he discovered it only a few days later. When he found it on May 24th this nest also contained two eggs, and the same number on the 27th. I have frequently seen Siskins about Portlaw—several times in small flocks in the surrounding woods during winter, and again in smaller numbers in spring. I have little doubt but that they breed in this neighbourhood, though I have never found the nest. I had never heard of the Siskin's thieving propensities until my young informant wrote me word. I may mention that he is a most accurate and careful observer, and while he lived in my parish gave me a good deal of help in natural history. Three years ago he brought me a large number of caterpillars and pupæ of *Lithosia quadra*, and showed me a great many larvæ feeding on lichens on oak, beech, and whitethorn. A most interesting and detailed account of the Siskin, its life-history, breeding habits, and distribution is given by Mr. Ussher in his 'Birds of Ireland.'—WILLIAM W. FLEMING (Coolfin, Portlaw, Co. Waterford).

Nesting of the Lesser Redpoll in Somerset.—Clevedon, I think, may be added to the localities in Somerset in which the Lesser Redpoll (*Linota rufescens*) is known to breed. During the summers of 1901-2 several pairs of Redpolls were observed about here, and were evidently breeding, and last spring there were again several pairs about; and on May 12th I found a nest nearly finished, which was built amongst ivy against the trunk of a fir-tree, and not more than five feet from the ground. No eggs were found in the nest before the 17th, when it contained one; on the 20th, three; and on the 22nd, four—all that were laid. The young birds were hatched on June 2nd. The sitting bird allowed a very close inspection without quitting the nest.—H. MEYRICK (Clevedon, Somerset).

Cuckoo's Note uttered while flying.—Some years ago (during 1894) a number of notes by different writers appeared in 'The Zoolologist' with reference to the Cuckoo calling while on the wing. At the

time it seemed to me to be a rather unusual occurrence, though several observers stated that they had noticed it not uncommonly. This year, however, I had a good opportunity of watching a Cuckoo at Tramore, in this county, and listened to it uttering its call while flying. On one day (June 4th) I heard it repeat "cuckoo" no fewer than eight times during one continued flight, and shortly afterwards the bird called five times, also during one flight. Prof. Newton spells the bird's name "Cuckow" in the fourth edition of Yarrell's 'British Birds,' and in an account of the bird to be found in the last edition of the 'Encyclopædia Britannica,' vol. vi. p. 685, he states that thus "the word was formerly and more correctly spelt—changed without any apparent warrant except that accorded by custom, while some of the more scholarly English ornithologists, as Montagu and Jenyns, have kept the older form." It seems to me that there was good reason for altering the spelling to "cuckoo." The bird's name admittedly was given to it on account of the note it utters, as is also the case with regard to other birds, *e.g.* Chiffchaff, Curlew, Hoopoe. I think that most observers will say that "cuckoo" is nearer to the bird's note than "cuckow."—WILLIAM W. FLEMING (Coolfin, Portlaw, Co. Waterford).

White-tailed Eagle (*Haliaëtus albicilla*).—On Nov. 12th I purchased, from Leadenhall Market, a White-tailed Eagle, which was said to have been shot in Scotland on Nov. 9th. The bird proved to be a female, and from its plumage was probably in its second year. On examination of the stomach and gizzard of the bird not a particle of anything could be found. This certainly seemed strange; but Morris, in his 'British Birds,' vol. i. p. 10, states that "this species has the power of abstaining for a very long time from food. One has been known to have lived for four or five weeks in total abstinence." But I should doubt if this species would abstain from food in its native haunts, unless extremely hard pressed, which seems unlikely at this time of the year. The colour of this bird is as follows: the feathers of the head and neck are dark brown, tipped with light brown, the roots being white, those on the crown itself being of a darker brown than those of the neck; the throat is lighter than the neck, with more white showing; the breast-feathers are white at the base, shading into light reddish brown, and dark brown at the tips, giving it a somewhat motley appearance; the lower part of the body light brown, mottled with dark brown; the back reddish brown, becoming darker at the tips, the roots of the feathers being white; the lower part of the back dark brown; the tail different shades of brown and dirty white; the under tail-coverts white, tipped with dark brown; the thighs

uniform dark brown; wing-coverts dark brown; primaries very dark brown, almost black; secondaries very light brown, dark at the tips; legs and toes yellow; claws black; cere brown; iris brown. Is not this the plumage in which the bird is occasionally mistaken for the Golden Eagle, as stated by Mr. Stevenson in his 'Birds of Norfolk'? The bird was measured in the flesh on arrival, of which the dimensions are:—Length, 35 in.; extent, 7 ft. 2½ in.; length of wing, 3 ft. 4 in.; of tail, 18 in.; of bill, 2⅔ in.; of tarsus, 4 in.; of toes, 2½ in.; of claws, 1½ in.; of head, 3½ in.—D. A. BANNERMAN (1, Lansdowne Terrace, Grand Parade, Eastbourne).

[We saw this bird in Leadenhall Market before it was sold. It then had a small rabbit in its talons, so that it was evidently about to break its fast when killed. It has been reported as a Golden Eagle in a contemporary.—ED.]

Osprey, Rough-legged Buzzards, Hen-Harrier, and Honey-Buzzard in Notts.—During the first week in September a Honey-Buzzard was shot in Thieves Wood, near here; it was hard at work on a wasp's nest. About the end of the second week in October an Osprey was killed when flying over the Trent at Gunthorpe. Two Rough-legged Buzzards, one trapped and one shot, about the same time in Rufford Forest. I saw a Hen-Harrier (female) fly past me in the deer-paddock here; a fine bird, and only about forty yards away. This was on Nov. 8rd.—J. WHITAKER (Rainworth Lodge, Notts).

Snow-Goose (*Chen hyperboreus*) in Ireland.—A sportsman, whilst out after Wild Geese, which had arrived in large numbers on the bogs in Co. Longford on Oct. 28th, saw two Geese pitch in a stubble-field, and, creeping up, he shot both. He gave one to a friend, and, having never met a white Wild Goose before, he sent the bird to us for mounting. It proved to be a female Snow-Goose, in excellent plumage. Although we made prompt efforts to secure the other bird, it had reached the pot. He described it as dark in the plumage, and the same size. We presume it was an immature bird.—WILLIAMS & SON (2, Dame Street, Dublin).

Red-breasted Merganser (*Mergus serrator*) in Cheshire.—On Nov. 1st, when watching the wildfowl on Tatton Mere, near Knutsford, I saw a Red-breasted Merganser with a little party of Great Crested Grebes. Presently it drew away from the Grebes, and, swimming low in the water and at a great pace, made for a pool which is only connected with the mere itself by a narrow gut. In this pool I found the bird diving for food close to the bank, and was able to get within

fifteen paces of it before it saw me. At such close quarters the vermiculated grey back, brown head and crest, red bill, large white wing-patch, and white under parts were, of course, plainly visible. The bird did not spring clear from the water as a Mallard does when alarmed, but, submerging its body almost entirely, swam out from the bank for some yards, then rose and pattered, Coot-fashion, along the surface for a short distance before getting fairly on the wing. The Goosanders which were at Tatton for several weeks in the winter of 1902-3 used to behave in a similar way when suddenly alarmed. On returning to the mere I found that the Merganser had rejoined the Grebes, but it only remained with them for a few minutes, and then returned to its feeding place in the pool. Mr. T. A. Coward saw it fishing there two days later, and on the 7th we saw it in company of some Grebes in another part of the mere. On Nov. 14th, when we went to the mere with Mr. S. G. Cummings, we saw the Merganser again; then, as on the previous days, it was generally alone, although it affected the company of the Grebes to some extent. It never consortied with the Mallards, of which there were some hundreds on the water, as the Goosanders used to do, but disregarded them entirely. We had abundant opportunities of comparing the birds with the Grebes when swimming, and with the Mallards when on the wing. It was noticeably smaller than either, a fact which, coupled with the character of its plumage, clearly showed that it was a female. The Red-breasted Merganser is not often seen on the Cheshire coast, and has not been previously noticed on any of the inland waters.—CHAS. OLDHAM (Knutsford).

Little Crake (*Porzana parva*) in Co. Kildare.—A specimen of this bird was shot near Rathangan on Nov. 12th. The owner kept it rather long, as he was unaware of its rarity. As he happened to mention to us casually that he had shot a small water-hen, we asked for it to be sent without delay, and on arrival two days after, it proved to be a Little Crake, the second occurrence recorded of the capture of this species in Ireland, the first having been shot near Balbriggan, Co. Dublin, in March, 1854.—WILLIAMS & SON (2, Dame Street, Dublin).

Black Tern (*Hydrochelidon nigra*) in the Isle of Man.—On Oct. 15th a bird of this species was shot by Mr. E. Turner on Langness (the Castletown Bay side). It is an immature specimen, with pure white under parts; bill quite black, and the dark parts of the head and neck nearly so; the colours of the upper plumage in general also dark, but with some pale edges on the feathers of the mantle, wing-coverts, and outstanding patches on each side of the breast; feet rather pale brown.

This is the first recorded Manx occurrence of the Black Tern.—P. G. RALFE (Castletown, Isle of Man).

Gulls feeding.—When walking on the seaside at Ascog, Isle of Bute, in October, I saw a mature Herring-Gull dash into the water twice ; he was nearly under, and the third time went quite under, and came up with a crab, with which he flew to a rock hard by. The next day a large number of Kittiwakes were beating up wind close to sea, evidently over a shoal of fish ; some just dipped their heads and necks under, others half their bodies, and one here and there went quite under. No doubt the fish were swimming at various depths. I watched them for some time ; a pretty and interesting sight it was.—J. WHITAKER (Rainworth Lodge, Notts).

The Australian Emeu.—In 'The Zoologist' (*ante*, p. 81), Mr. Graham Renshaw gives a very interesting article on the extinct Black Emeu of Kangaroo Island, and the photograph is especially valuable ; but he states that there are three species recognized as valid, namely, the Common Emeu (*D. novæ-hollandiae*), the extinct Black Emeu (*D. ater*), and the Spotted Emeu (*D. irroratus*) ; but if he had referred to my article in the 'Emu,' the organ of the Australasian Ornithologists' Union, entitled "Emu Feathers," vol. i. p. 6, he would have seen that the *D. irroratus* is not a species, nor even a subspecies, and, although I wrote the article two years ago, further specimens received since have but confirmed what I there stated ; and that is, that there is only one Emeu in Australia, namely, *D. novæ-hollandiae*, and my friend Dr. Sclater also takes the same view.—D. LE SOUËF (Director, Zoological Gardens, Melbourne).

Bird Notes from Shetland.—

REDBREAST (*Erithacus rubecula*).—Several seen on May 4th and following days.

BLACKBIRD (*Turdus merula*).—First nest with four eggs found May 8rd.

RING-DOVE (*Columba palumbus*).—One, first seen at Halligarth, May 10th ; last seen, May 25th. One shot at Halligarth, Oct. 20th.

SWIFT (*Cypselus apus*).—One seen at Baltasound, May 25th ; wind W., strong.

MARTIN (*Chelidon urbica*).—Eight seen at Baltasound, May 25th.

CUCKOO (*Cuculus canorus*).—One seen at Mailland, May 28th.

GANNET (*Sula bassana*).—One caught alive at Norwich by a woman on May 28th. The bird had ventured up a narrow stream, and, being unable to rise for want of room, was easily captured by the woman, who threw her jacket over it.

TREE-SPARROW (*Passer montanus*).—For several years I have believed that the Tree-Sparrow has nested here, having seen it under circumstances which allowed of little doubt that such was the case. At last my watching has led to a satisfactory result, for on June 18th I found a nest with five eggs. The nest was built into a hole in the south wall of the family burial-ground, which adjoins the garden at Halligarth; it was composed externally of grass and some rootlets, and was lined with feathers of gulls, hens, crows, &c., and a little black horsehair. It was altogether a more tidy, or rather less untidy, structure than the nest of the House-Sparrow. I cannot claim the credit of being the first observer to report the occurrence of the Tree-Sparrow in Shetland during the breeding season, though I do not think the nest or eggs have been found and identified before.

GREAT NORTHERN DIVER (*Colymbus glacialis*).—A fine specimen (a male) was brought to me alive on July 10th. A fisher-lad had caught it sitting on a rock at the mouth of the harbour of Baltasound; it seemed in a very exhausted condition. The lad said the bird was "sitting on its stomach," and tried to scramble to the sea, shuffling along with its breast close to the ground. I kept the bird for some time, but never once saw it assume an erect attitude.

CROSSBILL (*Loxia curvirostra*).—Four seen on July 19th. Many others seen from Oct. 5th to the end of that month.

WRYNECK (*Ilynx torquilla*).—One (a male) caught alive at Harolds-wick on Sept. 2nd, and brought to me. The bird was in fine plumage, and in good condition, though, when I opened the stomach, it was empty. The bird weighed 362 grains. Though several captures and occurrences have been reported for Shetland, this is the first Wryneck I have seen since August, 1884, when my brother shot one in front of this house.

GREAT SPOTTED WOODPECKER (*Dendrocopos major*).—One shot Sept. 17th, and another caught alive same day; both at west side of this island.

BAR-TAILED GODWIT (*Limosa lapponica*).—One shot Sept. 21st.

GREAT GREY SHRIKE (*Lanius excubitor*).—On Oct. 15th my mother called me to see what she thought was a Great Grey Shrike, which was devouring a Robin which it had hung up on a black-currant bush. I arrived in time to catch a glimpse of the bird, and to see the remains of its feast. The bird flew into the shrubbery at Halligarth. On Oct. 19th and 20th I saw presumably the same bird in and about the shrubbery; there was no doubt as to its identity. I fired at it on the latter date, but the killing power of my walking-stick gun was not

great enough, for it only wavered in its flight for a moment after being struck, and disappeared. I never saw it again.—T. EDMONDSTON SAXBY (Halligarth, Baltasound, Shetland).

Early Autumn Notes in Oxfordshire, in the Neighbourhood of Witney, 1903.—

Sept 17th.—* “A nest of the House-Martin, built against the cornice of Mr. H. C. Habgood's house, containing young ones, who took their departure a few days later.” “At Ducklington observed two more nests of *Chelidon urbica*, built in the usual manner under the stone-slated eaves of a cottage, and containing young ones, to whom the parents kept flying with food.” “Surely this is very late?”

In the meadows :—“Put up a covey of three Partridges (*Perdix cinerea*) in the grass.” A poor apology for a covey, but the birds have had a bad time of it this year. “Two Ring-Doves flew out of a mountain-ash, but there appeared to be no berries at all.” “I have never seen more Lapwings than to-day in the meadows between Ducklington and Witney. In the breeding season there would not be more than about twenty pairs, but no doubt at this time of year they are further augmented by migrants from the north; at any rate, there were several hundred there to-day, and, although so many, they were less clamorous than one-quarter of that number would be in the breeding time.” “When taking to flight it seemed that the leader would utter the well-known ‘pee-wit’ cry, and the remainder would immediately and noiselessly follow.” “When on the wing their flight is rather peculiar.” “Each individual flies as though he were suspended on a wire, and keeps bobbing (hardly the word) up and down; ‘vacillating’ does not describe it, neither does ‘undulating.’” “Lapwing's beak-marks noticeable in the soft marshy ground, which is more swampy than usual owing to recent flooding.”

Sept. 18th.—“Cloudless sky in morning and heavy dew.” “Thrushes feeding on slugs on cabbage-leaves.”

Sept. 19th.—“Martins still in nest at Ducklington, and many Lapwings in the meadows.”

Sept. 22nd.—“Weather muggy and oppressive; no sun, and little rain; white mist from the meadows.” Mr. Habgood has an excellent garden, extending from the back of his house some five hundred yards down to the River Windrush. Here the prospect is exceedingly pleasing. There is a grove of willows and black poplars growing on

* Portions in inverted commas taken direct from note-book, as noted on the spot.

the river-bank. The terrible storm of Aug. 10th brought down one magnificent example, which lay obliquely across the turbid stream, and the fallen trunk lent itself admirably as a capital place from which to make observations and notes. "Many Robins in copse by riverside, singing nicely." "One uttering the note (anxiety ?), rather like two stones chinking together, affects a wire-fence, somewhat after the fashion of the Flycatcher ; all this as it grows dusk ; cannot hear any other birds than Robins."

Sept. 28rd.—"Walking home from Stanton Harcourt, saw a Barn-Owl hawking about the hedgerows. It was almost quite dark at 6.30 p.m." "Heard Peewits calling, and was just able on two or three occasions to see a flock flying over our heads." "I think they must be a little nocturnal in habits." The Limicoline birds have, generally speaking, large eyes, a feature that at once stamps them as being more or less nocturnal in habits.

Sept. 25th.—"Watching Pied Wagtail in meadow opposite bottom of garden. It did not once capture an insect on the wing, and only took to wing when it at last flew away on its own accord." "Several times it hopped." This hopping was not like the Sparrow's familiar hop; I should rather have written "jump." The meadow was studded with mole-hills, and in the course of its perambulations—in true Wagtail fashion—the little creature on several occasions found itself at the top of one of these mounds, and probably, when spying an insect, jumped rather than hopped towards it, but on no such occasion were the wings brought into use. "Watching a troupe of Bullfinches (six) engaged on a row of sweet-peas, but, on examining the place, found no evidence of their having attacked the pods ; they had confined their attentions to picking out the seeds of the sow-thistle, several specimens of which were growing close at hand." "Robins in good song."

Sept. 26th.—"Large flocks of Peewits in the Minster Meadows." "Arrived at Minster Ruins at 8.50 p.m. ; saw and heard many Jackdaws." "After walking down the village to an inn for refreshment, returned to the ruins at 4.30 p.m., and there were no Jackdaws to be seen or heard." "Have they probably gone off to seek food ?" "Not five minutes after noting this I hear distant chatterings, and right away over the hills I see two huge flocks of Daws, wheeling, sweeping, dividing into companies and rejoining—quite like organized manœuvring." "One flock splits in two ; one part falls towards the ground, like a shower of large black hailstones ; the other circles round and round, now almost invisible, now quite apparent." "Two Herons uttering their harsh cry."

The Sky-Lark was singing one day (the date is not forthcoming), and this is the only time I heard it. Such birds as the Song-Thrush, Blackbird, and Great Tit, who may, as a rule, be heard to resume their notes about this time of the year, were silent.

Notes on some late Nests.—At the beginning of this note I made reference to the late nesting of the House-Martin, and queried my observation, "Surely this is very late?" On looking up old notes, I find no entries of birds nesting so late in the year, except the Doves, but no doubt cases often occur; but it is not often that I have been in the country in the month of September. Thinking, however, that some concise notes on late nesting may prove interesting, I will venture to record them. The instances as quoted are not all from personal observation, but at the same time I may say they are on good authority.

August nests in the county of Oxfordshire, more particularly the district in the neighbourhood of Witney:—

Turdus musicus.—Nest with young.

Erithacus rubecula.—Nest with five eggs.

Sylvia cinerea.—With "chipping" eggs or young.

Acrocephalus streperus.—Once. The nest built in the usual way among the reed-stems on the River Isis, and containing three eggs.

Accendor modularis.—Nest with three eggs.

Motacilla lugubris.—Nest with young.

Anthus pratensis.—Nest with young.

Chelidon urbica.—A great many instances of their nests containing eggs, or young ones "cheeping" and clamouring for food.

Carduelis elegans.—Twice; one nest with four, the other with five, eggs.

Ligurinus chloris.—Many nests, with contents varying from slightly incubated eggs to young ones.

Passer domesticus.—Once with five eggs.

P. montanus.—One nest with five eggs, and another with one.

Emberiza miliaria.—Once only with young.

E. citrinella.—More instances than any, varying from apparently fresh eggs to young about to fly. The most curious nest of this species I have ever seen, and found early in August. It was situated about ten or twelve feet from the ground, built into a hollow in the "roof" of a haystack; the hen bird was entirely unsheltered as she sat.

E. schaeniclus.—One nest with three eggs.

Corvus monedula.—Have repeatedly seen this species, apparently nesting late, but have not verified it.

C. frugilegus.—Not often occurring. The proof has generally

been as a result of an early gale, when the young Rooks have been blown out of their nests.

Alauda arvensis.—Young just leaving the nest.

Coturnix communis.—A nest with nine eggs in field of growing barley, and laid bare by the harvester.

Crex pratensis.—On two or three occasions with eggs and young.

Podiceps minor.—Once with three eggs, as yet unstained, and therefore probably fresh.

Of the foregoing it may be noted that the Common Whitethroat, the Reed-Warbler, the House-Martin, the Quail, and the Landrail are birds that are eminent migrants, and it would be interesting to know—supposing the various broods are successfully reared—what happens to them. Do they migrate when fully developed, or do they, before becoming strong enough to undertake their arduous journeys, become victims to first frosts of early autumn?—E. F. M. ELMS.

INSECTA.

Note on the Habits of a South African Species of Rhynchota (*Henicocephalus* sp.).—"When I first collected the specimens I send you, I placed them in a small narrow glass tube. After I had thus secured three specimens (two males and one female) I noticed what seemed to be an intense struggle going on in the tube. After watching the contest for a while I saw one manage to insert its rostrum into the sternum of the other, which I thought settled the question of these insects being not only predaceous, but cannibals as well! Imagine my surprise, after less than a minute, to see the injured male become paralysed, and only just able to occasionally move its legs, while the victorious one proudly marched over him and paid his respects to the female. After a short time they were again a happy family, for the vanquished male was slowly recovering, and apparently quite willing to play a subordinate part." — C. W. MALLY (Assist. Entomologist, Dept. of Agriculture, Cape Town).

[The above extract from a letter I received from Mr. Mally affords interesting information on the habits of a very small family of Heteropterous Rhynchota allied to the *Reduviidae*. The species is probably an undescribed one, but at present it is impossible to compare it with the type of another South African species, which is not to be seen in this country.—ED.]

Verlusia rhombea in Lincolnshire.—Whilst at Mablethorpe in August, 1908, Mr. C. S. Carter, M. C. S. Curator, Louth Ant. and Nat.

Soc., and myself obtained an immature specimen of this "air" bug. A specimen was captured at the same place in 1901, and it was then regarded as a visitor, all the localities previously given, I believe, being south of London; but this second authentic occurrence goes to prove that it was not a "visitor," but a "native." — W. PERCIVAL WESTELL (5, Glenferrie Road, St. Albans, Herts).

APPLIED ZOOLOGY.

I HAVE received a letter from Dr. E. F. Bashford, Superintendent of the Cancer Research under the direction of the Royal Colleges of Physicians and of Surgeons. He tells me it would very materially assist the work of the Cancer Commission if they would collect material of the nature of malignant or pathological growths from the lower Vertebrates, and, if it exists, from Invertebrates. Cysts or tumours caused by Nematodes, Trematodes, or Cestodes are not required, but any tumour of unknown origin, if sent to London, would be carefully investigated at the Cancer Research Laboratory, and might prove of real value in the enquiry. Such specimens, whether already preserved or fresh, should be placed in weak formalin, and forwarded by post to the "Director, Cancer Research Fund, Examination Hall, Victoria Embankment, London, W.C." Pathological material of this kind is of special importance if found in Amphibia, or in Fishes, or in Invertebrates, or in embryos generally. I understand that the Cancer Commission in Berlin have already received much useful material from the various Zoological Laboratories in Germany, and it would greatly assist the work of the Cancer Research Fund in this country if similar supplies could reach them from our British institutions.—A. E. SHIPLEY (The Museums, Cambridge).

NOTICES OF NEW BOOKS.

Pictures of Bird Life on Woodland, Meadow, Mountain, and Marsh. By R. B. LODGE. S. H. Bousfield & Co., Lim.

THE sacredness of animal life, always an axiom in old Indian philosophy, is rapidly permeating Western thought. It is even probable that at some near future the *battue* of the wealthy sportsman may, like the millions of the successful financier, be relegated to the domain of vulgarity. But that will not occur in our time, though it is certain that even now the trend of public opinion is in that direction. The happy days we have passed in killing game and procuring zoological specimens give sometimes a less roseate reminiscence, and promote somewhat regretful reflections. In ornithology the camera is now frequently carried in place of the once indispensable gun, and if the last can be less used, and the former come into greater vogue, ornithologists as a class will not regret the changed conditions.

Mr. Lodge, in this charming book, has one great acquisition which generally takes a reader captive. He is absolutely enthusiastic on his subject, and we imbibe this spirit as we follow, not so much his pages, as the actual scenes and adventures which he describes. Moreover, he is in the unique position of an author whose statements must be accepted, as they are attested by the photographs from life which form the material of the many beautiful and frequently most instructive illustrations. We are thus beyond the art of the taxidermist, and no longer studying the attitude of the prisoner in the aviary, but seeing wild birds as they appear in their natural surroundings. Their *pose* is also generally quite undisturbed, for the reader must learn for himself the many ingenious devices that have been invented for the action of invisible photography. Where a bird once lost its liberty in a trap, it now only unwittingly provides an object for the camera. The subject of nidification now again opens a new field for work, the egg-collector becomes only more or less a pioneer, and we are awaiting photos of many nests in their natural environment, and with the parent bird or birds in attendance. A new world to conquer has arisen; the camera

now accompanies the travelling zoologist—it will often be his only weapon. 'The Camera on the Amazons,' 'The Naturalist Photographer in the Malayan Archipelago,' will be books to supplement the delightful volumes of Bates and Wallace.

These are probably some of the conclusions which will strike most readers of this real bird-book.

The Vertebrate Fauna of "Dee." By GEORGE SIM, A.L.S.

Aberdeen: D. Wyllie & Son.

THE opening paragraph to the author's preface well describes this volume: "Many changes have occurred in 'Dee' since 1855, the date of issue of the *Natural History of Deeside and Braemar*, written by the late highly talented Dr. MacGillivray. The following pages are the result of observations made during the past forty years, which, it is hoped, will bring those changes into view, and the state of our Fauna up to date."

The introduction describes the beautiful "Dee," which comprises the greater part of the counties of Aberdeen and Kincardine; and what old associations arise in connection! As we read of the red sandstone cliffs, we think of Hugh Miller; while did not Smiles introduce the world to Thomas Edward, to whom Scotland proved a good but hard parent? These names are excluded from no faunistic area, they belong to all North Britain. That there are still good observers, unknown to fame or notoriety, is proved by the many references in Mr. Sim's volume, especially in connection with birds and mammals, to information afforded by foresters and keepers.

Mr. Sim has spared no pains in collecting all available information, which he has well analysed and selected for his pages. In Reptilia, the Hawks-bill Turtle (*Chelonia imbricata*) finds a place on the authority of two specimens taken in Salmon-nets.

A very welcome and valuable section is devoted to the "Fishes of the East Coast from Wick to Firth of Forth." The Bonito (*Thynnus pelamys*) is included, a specimen having been caught at Kirkside in 1859, which is now in Montrose Museum; the Salmon is treated in an excellently condensed and thorough manner; the Grayling (*Thymallus vulgaris*) seems a somewhat unauthenticated inclusion; the Loach (*Nemacheilus barbatula*) is, as Mr. Sim allows, enumerated on somewhat insufficient evidence. Of the Sandy Ray (*Raia radula*), Mr. Sim states he

kept a daily record of all the examples that were brought into Aberdeen Market from May 7th, 1892, to July 5th, 1895, "and within that period 2865 females stood against only 123 males."

The illustrations are not numerous, but very effective, especially those depicting Scottish scenery.

Animal Studies: a Text-book of Elementary Zoology for use in High Schools and Colleges. By DAVID STARR JORDAN, VERNON LYMAN KELLOGG, and HAROLD HEATH. D. Appleton & Co.

THIS small volume takes a rapid survey of animal life under the different subject-matters of the morphologist, the physiologist, and the ecologist, and it contains chapters on those various questions which have been prompted during the last fifty years by an ever-increasing evolutionary conception of zoology. With the ordinary descriptions of the principal features of animal existence, the ground traversed has been already somewhat amply surveyed ; the originality consists in placing in an elementary book, discussions on subjects which have a far-reaching philosophical import. Thus the contrast between the apparent and actual death of a species is very suggestive, and likely to stimulate the ideas of a pupil on this subject. Protective resemblance and mimicry are of course to the front, but the case is not strengthened by the reproduction of an old but erroneous illustration. The *Kallima*, or leaf-butterfly, is again figured resting with its head uppermost, whereas it is now generally known to rest in a different position, head downwards, "like a dead leaf hanging by its stalk." Instinct and reason are discussed on somewhat generally accepted but antique lines, though the student may perhaps gather that these two attributes can be little more definitely separated, than can primitive forms of animals and plants, as the authors have ably demonstrated at the commencement of the volume.

Birds' Eggs of the British Isles. Collated by ARTHUR G. BUTLER, Ph.D., &c. Illustrated by F. W. FROHAWK, M.B.O.U. Brumby & Clarke, Lim.

We are given the following particulars as to the genesis of this publication. After the production of 'British Birds, with

their Nests and Eggs,' the publishers were repeatedly asked to issue the coloured plates of eggs, with appropriate letterpress, separately. "It was urged that a comprehensive book of this kind, published at a reasonable price, would be most acceptable as a school prize or birthday gift, to encourage a taste for the pursuit of Natural History in the youth of Great Britain and Ireland."

The volume, as collated by Dr. Butler, thoroughly fulfils its aim and mission. If it cannot be altogether considered a new book, it is certainly a new edition of a special part of the larger publication ; the eggs are beautifully drawn and coloured, and the book is of convenient size for reference.

On the Birds of Fernando Po. By BOYD ALEXANDER, F.Z.S.
Reprinted from 'The Ibis,' July, 1903.

We have to thank the author for sending us a separately bound copy of this excellently written and illustrated contribution to Ethiopian ornithology. As most of our ornithological readers are also conversant with their 'Ibis,' we need scarcely say more than that, and, as the author remarks, "the rich fauna of Fernando Po supports the theory that this island at one time formed part of the mainland. A large proportion of the birds are West African, while many species of its plants have been found to occur in the highlands of Abyssinia."

Edmondston's Flora of Shetland. Second edition. Edited and revised by C. F. ARGYLL SAXBY, F. S. Sc. Oliphant, Anderson, & Ferrier.

ALTHOUGH this little book is devoted to botany, it will be neglected by few naturalists who visit Shetland ; our readers will also find much of interest in Mrs. Jessie N. E. Saxby's compilation from the published life of her brother Thomas Edmondston, its original author, and a contributor to the earliest volumes of 'The Zoologist.' It is seldom that natural history can claim two names in one family, as can be done with those of Edmondston and Saxby. The small volume has been, in its classificatory features, faithfully edited and revised by C. F. A. Saxby, brother of our present well-known contributor.

OBITUARY.

As we go to Press, the news of the death of HERBERT SPENCER has caused the deepest regret in all intelligent circles throughout the world. A great intelligence, a just mind, and a truly humane man, have passed from us in his person. His influence on Zoology has been very considerable, and one who has watched it for fifty years has promised to write an appreciation of the same in our next (January) issue.



